

RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Two-Year Exchange Agreements and/or Warren Act Contracts for Conveyance of non-Central Valley Project (Groundwater) in the Delta- Mendota Canal – Water Year 2010 through Water Year 2011

EA-09-169



U.S. Department of the Interior
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Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Contents

Section 1	Purpose and Need for Action.....	4
1.1	Background	4
1.2	Purpose and Need.....	4
1.3	Scope	4
1.4	Potential Issues	5
1.5	Reclamation’s Legal and Statutory Authorities and Jurisdiction Relevant to the Proposed Federal Action.....	5
Section 2	Alternatives Including Proposed Action.....	8
2.1	Alternative A – No Action	8
2.2	Alternative B - Proposed Action	8
Section 3	Affected Environment & Environmental Consequences.....	12
3.1	Air Quality.....	12
3.2	Water Resources.....	14
3.3	Land Use	28
3.4	Biological Resources.....	30
3.5	Cultural Resources	36
3.6	Indian Trust Assets.....	37
3.7	Socioeconomic Resources.....	38
3.8	Environmental Justice	39
3.9	Global Climate Change	41
3.10	Cumulative Impacts.....	42
Section 4	Consultation and Coordination	44
4.1	Fish and Wildlife Coordination Act (16 USC § 661 et seq.)	44
4.2	Endangered Species Act (16 USC §1531 et seq.)	45
4.3	National Historic Preservation Act (16 USC § 470 et seq.).....	45
4.4	Migratory Bird Treaty Act (16 USC § 703 et seq.).....	45
4.5	Executive Order 11988 – Floodplain Management and Executive Order 11990 - Protection of Wetlands.....	46
4.6	Clean Water Act (16 USC § 703 et seq.)	46
4.7	Clean Air Act (42 USC § 7506 (C)).....	46
Section 6	List of Preparers and Reviewers	47
Section 7	References.....	47
Appendix A – Groundwater Basins and Well Locations		
Appendix B – Water Quality Monitoring Program – Groundwater		
Appendix C – Exchange Contactors’ Letter		

List of Figures and Tables

Figure 1-1	General Location Map.....	7
Figure 3-1	Federal Water District and Water Conveyance Facilities Near the Mendota Pool....	19
Figure 3-2	Mendota Pool	21
Table 2-1	Warren Act Contract/Exchange Agreement Quantities for Groundwater Pumping into DMC	8
Table 2-2	Potential Delivery Locations for Groundwater Pump-in Water.....	9
Table 3-1	District Pumps	13

Table 3-2 San Joaquin Valley General Conformity de minimis Thresholds	13
Table 3-3 Proposed Action Calculated Emissions	14
Table 3-4 5-Year CVP Allocation Percentages	15
Table 3-5 Baseline Supply	15
Table 3-6 Groundwater Balance in the Exchange Contractors Service Area Overall Groundwater Balance, 1993-2002	24
Table 3-7 San Joaquin Valley Groundwater Basins (DWR 2003), Ordinances, and Districts....	25
Table 3-8 Past Groundwater Pumping Under the Groundwater Pump-in Program	26
Table 3-9 Threatened and Endangered Species List.....	32
Table 3-10 Job Distribution (2007) and Growth by Industry Sector (2001-2007)	38
Table 3-11 County-Level Socioeconomic Data.....	39
Table 3-12 Community Characteristics by County	40
Table 3-13 Warren Act Contracts and Transfers Proposed between 2007-2009.....	43

List of Acronyms, Abbreviations, and Definition of Terms

AF	acre-feet (the volume of water one foot deep and an acre in area)
AF/y	AF per year
APE	area of potential effects
BCID	Banta-Carbona Irrigation District
BBID	Byron Bethany Irrigation District
BO	Biological Opinion
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CCID	Central California Irrigation District
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH ₄	methane
CO	carbon monoxide
CO ₂	carbon dioxide
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
DMC	Delta-Mendota Canal
DPWD	Del Puerto Water District
DSA	Direct Service Area
DWR	California Department of Water Resources
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
Exchange Contractors	San Joaquin River Exchange Contractors
FWCA	Fish & Wildlife Coordination Act
GHG	Greenhouse gases
ITA	Indian Trust Assets

MBTA	Migratory Bird Treaty Act
Mendota WA	Mendota Wildlife Area
Mg/L	milligram per liter
M&I	municipal and industrial
MOU	Memorandum of Understanding
MP	Milepost
MSWD	Mercy Springs Water District
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
O ₃	ozone
NAAQS	National Ambient Air Quality Standards
NO ₂	nitrogen dioxide
Pacheco	Pacheco Water District
Panoche	Panoche Water District
Pb	Lead
PID	Patterson Irrigation District
PM _{2.5}	particulate matter 2.5
PM ₁₀	particulate matter 10
PWD	Panoche Water District
Reclamation	Bureau of Reclamation
SIP	State Implementation Plan
SJV	San Joaquin Valley
SJVAB	San Joaquin Valley Air Basin
SJR	San Joaquin River
SLC	San Luis Canal
SLDMWA	San Luis & Delta-Mendota Water Authority
SLWD	San Luis Water District
SO ₂	sulfur dioxide
SOD	south-of-Delta
SWP	California State Water Project
TDS	total dissolved solids
WWD	Westlands Water District
USFWS	United States Wildlife Service

Section 1 Purpose and Need for Action

1.1 Background

The San Luis & Delta-Mendota Water Authority (SLDMWA), on behalf of its member agencies, has requested approval of two-year Warren Act contracts to pump groundwater during Contract Water year 2010 (March 1, 2010 through February 28, 2011) into the Delta Mendota Canal (DMC) for delivery to contractors.

The Warren Act (Act as of February, 21, 1911, CH. 141, (36 STAT. 925)) authorizes the Bureau of Reclamation (Reclamation) to negotiate agreements to store or convey non-Central Valley Project (CVP) water when excess capacity is available in federal facilities. The action area of the Proposed Action consists of water districts in the Delta Division and San Luis Unit of the CVP in central California.

1.2 Purpose and Need

In 2010, and probably for several years to come, because of hydrologic conditions and/or regulatory constraints, the operation of the CVP by Reclamation, will likely result in less water being made available to the south-of-Delta (SOD) CVP water service contractors and State Water Project (SWP) contractors than is required to meet the demands of their customers. California experienced dry years in 2007, 2008, and 2009. The California Department of Water Resources (DWR) is anticipating a fourth year of drought (DWR 2009a). In addition, due to operational, hydrological, and regulatory constraints, operation of the Federal Jones Pumping Plant will likely be limited and further reduce available CVP contract supplies in 2010. Pumping curtailments began in 2007 in response to Federal Judge Oliver Wanger's Delta Smelt interim Remedy Order. Water District members of the SLDMWA will need additional water to supplement their 2010 CVP water supply during another potential water shortage year.

1.3 Scope

This environmental assessment (EA) has been prepared to examine the impacts on environmental resources as a result of No Action Alternative of not conveying non-CVP water in federal facilities and the Proposed Action of conveying non-CVP water in federal facilities.

The following districts are considered in the EA in the effects analysis and could potentially participate in this Proposed Action (see Figure 1-1 general location map):

- Byron Bethany Irrigation District (BBID)
- Banta-Carbona Irrigation District (BCID)
- Del Puerto Water District (DPWD)
- Mercy Springs Water District (MSWD)
- Pacheco Water District (PWD)
- Panoche Water District (Panoche)
- San Luis Water District (SLWD)

- West Stanislaus Irrigation District (WSID)

1.4 Potential Issues

The resources potentially affected by the Proposed Action and therefore analyzed within this EA include:

- Air Quality
- Water Resources
- Land Use
- Biological Resources
- Cultural Resources
- Indian Trusts Assets
- Socioeconomic Resources
- Environmental Justice
- Global Climate Change
- Cumulative Impacts

1.5 Reclamation's Legal and Statutory Authorities and Jurisdiction Relevant to the Proposed Federal Action

Several Federal laws, permits, licenses and policy requirements have directed, limited or guided the National Environmental Policy Act analysis and decision making process of this EA and include the following:

- Reclamation States Emergency Drought Relief Act – Section 102 of the Reclamation States Emergency Drought Relief Act of 1991 provides for use of Federal facilities and contracts for temporary water supplies, storage and conveyance of non-CVP water inside and outside project service areas for municipal and industrial (M&I), fish and wildlife and agricultural uses.
- Reclamation States Emergency Drought Relief Act - Section 305 of 1991, enacted March 5, 1992 (106 Stat. 59), also authorizes Reclamation to utilize excess capacity to convey non-CVP water.
- San Joaquin County Groundwater Export Ordinance Number 401.4 - San Joaquin County has adopted an ordinance, 401.4 Section 5-8100 of Title 5 of the Ordinance Code of San Joaquin County, which requires a permit to extract and export groundwater for use outside of the county. This ordinance is hereby incorporated by reference into the Proposed Action.
- Contracts for Additional Storage and Delivery of Water – Central Valley Project Improvement Act (CVPIA) of 1992, Title 34 (of Public Law 102-575), Section 3408, Additional Authorities (c) authorizes the Secretary of the Interior to enter into contracts pursuant to Reclamation law and this title with any Federal agency, California water user or water agency, State agency, or private nonprofit organization for the exchange, impoundment, storage, carriage, and delivery of CVP and non-CVP water for domestic, municipal, industrial, fish and wildlife, and any other beneficial purpose, except that

nothing in this subsection shall be deemed to supersede the provisions of section 103 of Public Law 99-546 (100 Stat. 3051). The CVPIA is incorporated by reference.

- Water Quality Standards – Reclamation requires that the operation and maintenance of CVP facilities shall be performed in such manner as is practical to maintain the quality of raw water at the highest level that is reasonably attainable. Water quality and monitoring requirements are established by Reclamation to protect water quality in the DMC by ensuring that imported non-CVP water does not impair existing uses or negatively impact existing water quality conditions. These standards are updated periodically. The annual review for the approval of Warren Act Contracts would be subject to the then-existing water quality standards. The water quality standards are the maximum concentration of certain contaminants that may occur in each source of non-CVP water.
- Title XXXIV CVPIA, October 30, 1992, Section 3405 (a)
- Reclamation Reform Act, October 12, 1982
- Reclamation’s Interim Guidelines for Implementation of Water Transfers under Title XXXIV of Public Law 102-575 (Water Transfer), February 25, 1993
- Reclamation and United States Fish and Wildlife Service (USFWS) Regional, Final Administrative Proposal on Water Transfers, April 16, 1998
- Reclamation’s Mid-Pacific Regional Director’s Letter entitled “Delegation of Regional Functional Responsibilities to the Central Valley Project (CVP) Area Offices – Water Transfers”, March 17, 2008
- Warren Act - Act as of February, 21, 1911, CH. 141, (36 STAT. 925) authorizes the Bureau of Reclamation (Reclamation) to negotiate agreements to store or convey non-CVP water when excess capacity is available in federal facilities

Delta-Mendota Canal 2010 Warren Act Contracts

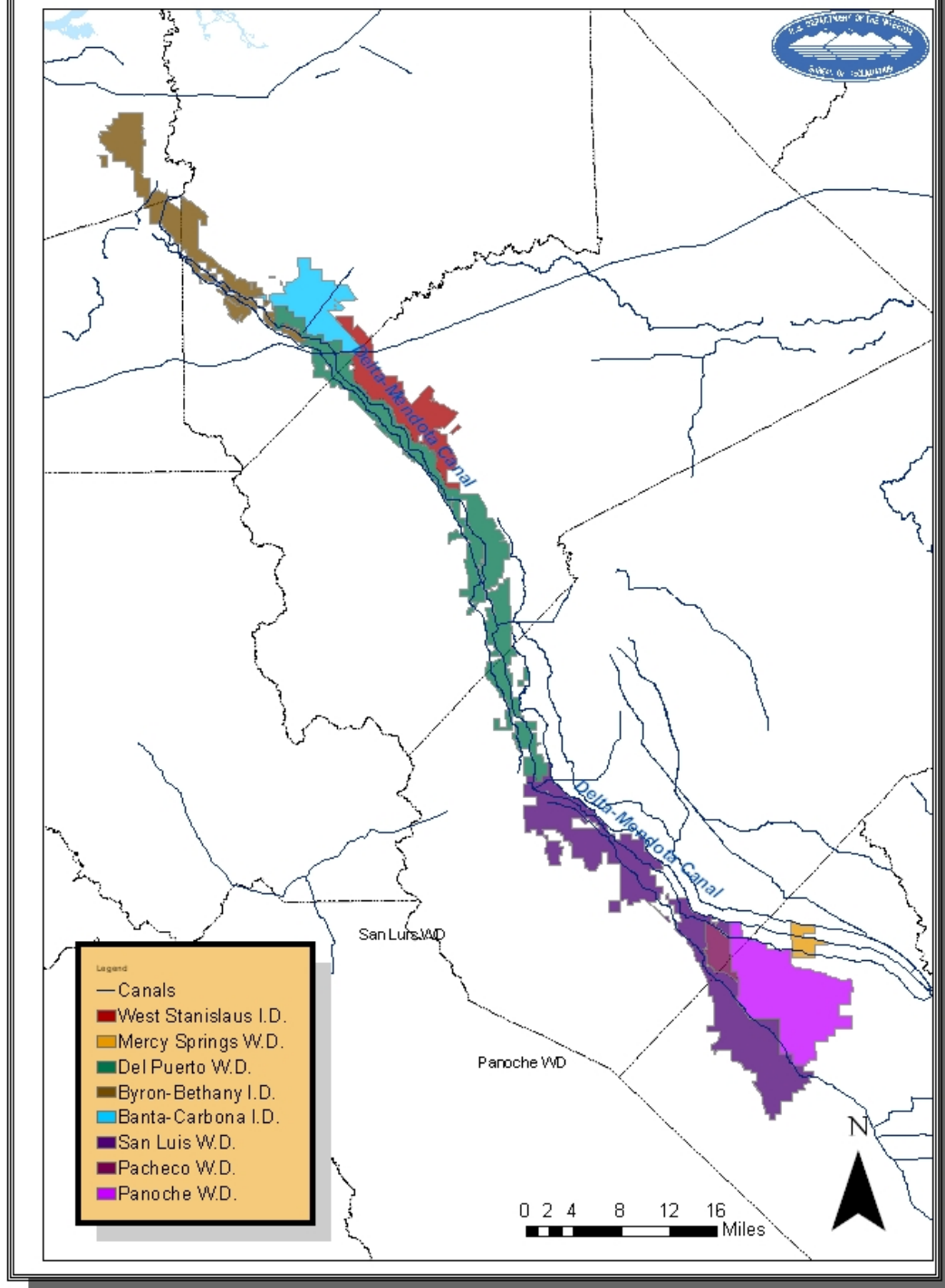


Figure 1-1 General Location Map

Section 2 Alternatives Including Proposed Action

2.1 Alternative A – No Action

Under the No Action Alternative, Reclamation would not issue Warren Act contracts to the requesting contractors within the Delta Division and San Luis Unit for the 2010 Contract Year. The No Action Alternative consists of the continuation of deliveries of CVP water supply in accordance with the terms and conditions of the applicable districts' CVP water service contracts. The districts could still pump groundwater, but would not be authorized to pump the groundwater into the DMC.

2.2 Alternative B - Proposed Action

Reclamation proposes to issue two-year Exchange Agreements and/or two-year Warren Act contracts to requesting CVP contractors within the Delta Division and San Luis Unit for the 2010 Contract Year and ending 2012. The term would be March 1, 2010 through February 28, 2011 for pumping and conveyance, and March 1, 2010 through February 29, 2012 for storage in San Luis Reservoir (SLR) and conveyance from the SLR.

Each participating contractor would be allowed to pump up to 10,000 acre-feet (AF) of non-CVP water into the DMC. Reclamation has capped the Proposed Action at 50,000 AF combined for all districts participating in the DMC Pump-in Program. The total amount of groundwater pumped into the DMC will not exceed that 50,000 AF. Conveyance and storage of non-CVP water in CVP facilities would be subject to available capacity.

Table 2-1 is a list of the water districts that could potentially participate in this Proposed Action and the estimated pumping quantities:

Table 2-1 Warren Act Contract/Exchange Agreement Quantities for Groundwater Pumping into DMC

<i>District</i>	Quantity for 2010 (AF)
Byron Bethany Irrigation District	2,000
Banta Carbona Irrigation District	4,500
Del Puerto Water District	10,000
West Stanislaus Irrigation District	3,000
San Luis Water District	10,000
Panoche Water District	10,000
Pacheco Water District	5,000
Mercy Springs Water District	5,500
Total	50,000

Source of non-CVP Water

The source of the non-CVP water would be district groundwater pumping. The districts would pump groundwater directly into the DMC (see Appendix A for well locations). The amount of water pumped into the DMC would be measured by SLDMWA field staff. Participating districts intend to pump up to 10,000 AF of groundwater into the DMC. However, the combined

total would not exceed 50,000 AF. The district would then take out a like amount from turnouts (see Table 2-2) on either the DMC or the SLC to be conveyed through their distribution systems for agricultural use to water users within the district.

Table 2-2 Potential Delivery Locations for Groundwater Pump-in Water

District	Groundwater Pumping DMC Turnout Milepost	Conveyance SLC Turnout Milepost
Byron Bethany Irrigation District	8.71-L,10.53-L,11.28-L,11.45-L, 12.07-R,12.37-L,13.00-L,13.27-L, 13.57-L,14.81-L,15.10-R,16.64- R,19.15-R,19.39-L,19.40-R, 19.59- R, 20.97-R	
Banta Carbona Irrigation District	20.42-L1RW, 20.42-L1, 20.42-L2	
	18.05-L,19.18-L, 20.43-L, 20.59-L, 21.12-R, 21.25-L, 21.65-L, 22.20-L, 22.50-R, 22.78-L, 23.41-L, 23.81-L, 23.94-R, 24.38-L, 25.02-L, 25.18-L, 25.65-L, 26.21-R, 26.89-R, 26.95-L, 27.80-R, 28.19-L, 28.89-L, 29.19-R, 29.19-L, 29.56-L, 29.95-R, 30.33-L, 30.43-R, 30.96-L, 31.31-L, 31.60-R, 31.60-L, 32.36-L, 32.38-R, 32.61-R, 32.62-R, 32.94-L, 33.07-R, 33.71-L, 33.90-R, 34.08-L, 34.55-L, 34.63-R, 35.04-R, 35.18-L, 35.73-RA, 35.73- RB, 36.01-L, 36.39-L, 36.45-R, 36.68-L, 37.32-L, 37.58-L, 38.15-L, 38.15-R, 38.80-L, 39.20-RA, 39.20- RB, 39.22-L, 39.78-L, 40.39-R, 40.45-L, 41.03-L, 41.53-L, 41.53-R, 42.08-L, 42.10-R, 42.50-R, 42.51-L, 42.68-L, 43.22-L, 43.73-L, 44.22- LA, 44.22-LB, 44.24-R, 45.20-L, 45.35-R, 45.38-L, 45.78-R, 45.79-R, 46.02-L, 46.19-R, 46.83-L, 47.37-L, 47.37-R, 47.87-L, 47.89-RA, 47.89- RB, 48.14-L, 48.60-LA, 48.60-LB, 48.96-R, 49.43-L, 49.56-R, 49.84-L, 50.66-L, 50.70-R, 51.41-L, 51.65-L, 52.02-R, 52.40-L, 53.41-L, 53.64- R, 54.01-L, 54.70-L, 55.19-L, 55.85- L, 55.95-R, 56.80-R, 56.82-L, 56.85-L, 57.46-L, 57.95-R, 58.26-L, 58.73-R, 58.90-L, 59.50-RA, 59.50- RB, 59.53-L, 60.54-R 61.05-L, 61.37-R, 61.84-L, 62.08-R, 62.67-L, 63.96-L, 64.32-R, 64.32-L, 64.85-L, 65.35-L, 65.37-R, 66.06-L, 66.68-L, 66.73-L, 67.16-R, 67.55-L, 68.03-R	
Del Puerto Water District		
West Stanislaus Irrigation District	31.31-L1, 31.31-L2	
Mercy Springs Water District	97.70R, 97.70L1, 97.70-L2, 98.74L	
Panoche Water District	93.25-R1, 93.25-R2, 95.95-L, 96.70-RB, 96.70-RD, 100.80-R, 100.84-R	96.15, 96.85,100.48,102.64
Pacheco Water District		89.66-LA 89.67-LA
San Luis Water District	69.21-L, 72.34-L, 73.06-L, 76.77-L,	75.49, 77.11, 79.39, 82.10, 82.00,

	77.24-L, 78.56-R1, 78.56-R2, 78.57-L, 79.13-L, 80.99-L, 81.08-RA, 81.08-RB, 81.08-RC, 81.80-R, 82.31-L, 82.79-R, 83.08-L, 86.71-R, 86.72-L, 87.35-R, 87.97-L, 88.65-RA, 88.91-L, 89.56-L, 90.53-R, 90.57-L	26.00, 83.24, 87.78, 89.69, 92.16, 92.73, 94.06, 98.15, 99.61, 102.20, 103.40, 104.20
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Each district would be required to confirm that the proposed pumping of groundwater would be compatible with local groundwater management plans. Each district would be limited to pumping a quantity below the “safe yield” as established in their groundwater management plan, in order to prevent groundwater overdraft and avoid adverse impacts.

Water quality and monitoring requirements are established by Reclamation. These standards were established to protect water quality in federal facilities by ensuring that imported water does not impair existing uses or negatively impact existing water quality conditions. The Delta-Mendota Canal 2010 Water Quality Monitoring Program – Groundwater (Appendix B) would be adhered to. The Delta-Mendota Canal 2010 Water Quality Monitoring Program describes the plan for measuring the changes in the quality of water caused by the conveyance of groundwater during 2010. The plan has been prepared by Reclamation, in cooperation with the SLDMWA, and the San Joaquin River Exchange Contractors Water Authority (Exchange Contractors), with assistance from staff of BCID, DPWD, SLWD, and Panoche. This monitoring plan will be conducted by staff of Reclamation and will complement independent monitoring by other Federal, State, and private agencies. Several sampling techniques will be used to collect samples of water, including real-time, grab, and composite.

The water would be used for irrigation purposes on established lands. There would be no new construction or excavation occurring as part of the Proposed Action. Pumping and conveyance would occur all within existing wells, meters, and pipes across DMC right-of-way.

No native or untilled land (fallow for three years or more) may be cultivated with the water involved with these actions.

In addition to Reclamation’s groundwater monitoring program requirements, the following conditions, as specified in the Exchange Contractors’ letter, would be adhered to (see below).

- No pumping will be allowed in Management Areas 2 and 3
- Any well that is proposed to pump into the lower DMC must obtain a current water quality analysis. The analysis shall consist of Ag Suitability and selenium, plus any other constitutes Reclamation may require (Wells may be pumped for 24 hours in order to get the initial sample for water quality testing.) These tests will be conducted on a monthly basis for the duration of the pumping period. From the Exchange Contractors’ perspective, pumping may be begin once they have received copies of current lab test results for salinity and selenium, recognizing the other constituents may take longer to obtain the lab results.
- Only wells that test at 1,500 ppm TDS or less at the well head will be allowed.
- Only wells that test at 2 ppb selenium or less at the well head will be allowed.
- The calculated degradation caused by the lower DMC wells shall not exceed 30 ppm. (The model developed by Reclamation during the 2008 and 2009 pumping program shall

be used and Reclamation shall provide at least weekly updates of the reports to the Exchange Contractors.)

- At any time, the wells in the lower DMC will be shut off if the measured water quality at Check 20 on the DMC exceeds 450 ppm TDS in a single day. The wells may resume pumping after the average water exceedence no longer exists for three days. Wells with water quality at the well head of 450 TDS or less would be allowed to continue to pump and would be subject to this restriction.
- The water would be credited to the receiving district as a whole, not for specific growers.
- The wells will only run through February 28, 2011.

Section 3 Affected Environment & Environmental Consequences

3.1 Air Quality

3.1.1 Affected Environment

The Proposed Action lies within the San Joaquin Valley Air Basin (SJVAB), the second largest air basin in California. Air basins share a common “air shed,” the boundaries of which are defined by surrounding topography. Although mixing between adjacent air basins inevitably occurs, air quality conditions are relatively uniform within a given air basin. The San Joaquin Valley (SJV) experiences episodes of poor atmospheric mixing caused by inversion layers formed when temperature increases with elevation above ground, or when a mass of warm, dry air settles over a mass of cooler air near the ground. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been established for the following criteria pollutants: carbon monoxide (CO), ozone (O₃), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), inhalable particulate matter (PM₁₀ and PM_{2.5}), and lead (Pb). The CAAQS also set standards for sulfates, hydrogen sulfide, and visibility.

Despite years of improvements, the SJVAB does not meet state and federal health-based air quality standards. The SJV is designated as a State and Federal non-attainment area for O₃, and PM_{2.5}, and a State and Federal attainment area for CO, SO₂, NO₂, and Pb. The SJV is designated a Non-attainment area by State standards and an Attainment area by Federal standards for PM₁₀. To protect health, the San Joaquin Valley Air Pollution Control District (SJVAPCD) is required by federal law to adopt stringent control measures to reduce emissions (SJVAPCD 2010).

Section 176 (C) of the Clean Air Act [CAA] (42 USC 7506 (C)) requires any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the Federal CAA (42 USC 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with SIP’s purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements will, in fact conform to the applicable SIP before the action is taken.

On November 30, 1993, the Environmental Protection Agency (EPA) promulgated final general conformity regulations at 40 Code of Federal Regulations (CFR) 93 Subpart B for all federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by the Proposed Action equal or exceed certain de minimis amounts thus requiring the federal agency to make a determination of general conformity.

Table 3-1 lists the kinds of pumps that could be used under the Pump-in Program for the participating districts.

Table 3-1 District Pumps

Water District	Pump Type	Horsepower
Byron-Bethany Irrigation District	Two new diesel – Tier 3	Max. 225 Each
Banta-Carbona Irrigation District	New diesel & Natural gas engine with gear head	300
Del Puerto Water District	13 electric pumps and one diesel engine that meets the EPA Tier 3 requirement.	N/A
San Luis Water District	Electric Pumps	N/A
Panoche Water District	Electric Pumps	N/A
Pacheco Water District	Electric Pumps	N/A
Mercy Springs Water District	Electric Pumps	N/A
West Stanislaus Irrigation District	Three Diesel Pumps	390 Each

Table 3-2 lists the de minimis thresholds for the San Joaquin Valley Air Basin.

Table 3-2 San Joaquin Valley General Conformity de minimis Thresholds

San Joaquin Valley Air Basin			
Pollutant	Federal Status	de minimis (Tons/year)	de minimis (Pounds/day)
VOC/ROG (as an ozone precursor)	Nonattainment serious 8-hour ozone	50	274
NO _x (as an ozone precursor)	Nonattainment serious 8-hour standard	50	274
PM ₁₀	Attainment	100	548
CO	Attainment	100	548

Sources: SJVAPCD 2010a; 40 CFR 93.153

3.1.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not issue two-year temporary Exchange Agreements and/or Warren Act contracts to requesting CVP contractors within the Delta Division and San Luis Unit for the 2010 contract year ending February 28, 2011. Participating Pump-in Program contractors could continue to pump groundwater for their use.

Proposed Action

Under the Proposed Action, Reclamation would issue two-year temporary Exchange Agreements and/or Warren Act contracts to requesting CVP contractors within the Delta Division and San Luis Unit for the 2010 contract year. The Proposed Action would allow non-CVP water to be conveyed and stored in CVP facilities. This would allow non-CVP water to be delivered to areas in the districts to supplement diminished CVP water supplies in 2010. No new facilities would be needed as a result of the Proposed Action.

The majority of pumps to convey the water under the Proposed Action are electric. These pumps would not emit pollutants at the pump; the source of the pollutants originates at the power plant. Power plants are permitted based on their maximum operating potential. The additional electricity would not result in the power plant exceeding operating capacity, and, thus, the applicable emissions permit. A majority of power is derived from fossil fuel combusted at power plants to generate electricity. CO₂ is the primary pollutant emitted as a result of the oxidation of the carbon in the fuel. NO_x and PM₁₀ are also emitted.

Very few pumps would be diesel pumps and would not exceed the de minimis thresholds (See Table 3-2).

In summary, the construction and operation of the Proposed Action would not cause an adverse impact to air quality in the SJVAB or exceed applicable standards.

Table 3-3 Proposed Action Calculated Emissions

Calculated Proposed Action Emissions			
Pollutant	Federal Status	de minimis (Tons/year)	Project emissions (Tons/year)
VOC/ROG (as an ozone precursor)	Nonattainment serious 8-hour ozone	50	18.1
NO _x (as an ozone precursor)	Nonattainment serious 8-hour standard	50	3.2
PM ₁₀	Attainment	100	Not Calculated
CO	Attainment	100	Not Calculated

Sources: SJVAPCD 2010b; 40 CFR 93.153

Air quality emissions for the Proposed Action are well below the de minimis thresholds for the SJVAPCD (Table 3-3); therefore, there would be no air quality impacts associated with this Proposed Action.

3.2 Water Resources

3.2.1 Affected Environment

Surface Water

For the purposes of the effect analysis, baseline conditions are described as the existing environment, and the existing environment is defined as the conditions during the past five years. The five-year average allocation of CVP water supplies delivered to the water contractors is described in Table 3-4. It lists deliveries of CVP water on a yearly basis for agriculture purposes from 2005 to 2009. The five-year average is 57 percent of contract amounts for agriculture. The annual contract amounts for the districts is 462,812 AF, thus the baseline supply is 263,802 AF (See Table 3-5).

Another dry year is anticipated for 2010. An allocations determination will be made in February and adjustments will continue to be made as the contract year progresses and the hydrology and pumping capabilities dictate.

Table 3-4 5-Year CVP Allocation Percentages

Year	Percent Ag Allocation
2005	85
2006	100
2007	50
2008	40
2009	10
5-year Average	57

Table 3-5 Baseline Supply

Water District	Maximum Contract Amount	57 Percent of Contract Amount
Banta-Carbona Irrigation District	20,000	11,400
Byron-Bethany Irrigation District	20,600	11,742
Del Puerto Water District	140,210	79,920
Mercy Springs Water District	2,842	1,620
West Stanislaus Irrigation District	50,000	28,500
Pacheco Water District	10,080	5,746
Panoche Water District	94,000	53,580
San Luis Water District	125,080	71,296
TOTAL	462,812	263,803

Banta-Carbona Irrigation District

BCID is located in San Joaquin County just south of the City of Tracy and is adjacent to the DPWD to the southwest and the WSID to the southeast. The district's primary supply of water is its pre-1914 water rights on the San Joaquin River. Historically, the district uses all of its pre-1914 water rights in order to irrigate lands within the district. The district has a contract with Reclamation for 20,000 af of CVP water. CVP water is used as a supplemental supply to the district's pre-1914 water supply for agricultural purposes.

The distribution system in BCID consists of 2.5 miles of unlined canal, 33.2 miles of concrete-lined canal, and 46 miles of underground pipeline. CVP water from the DMC is gravity-fed through two turnouts and is then distributed through a pipeline connected to the BCID Main Lift Canal. All of the district's facilities are either pump or gravity delivery canals. Currently, all gates within the district are manually operated and all the turnouts are measured daily (Reclamation 2005c).

Byran-Bethany Irrigation District

BBID is located near the City of Tracy. Although primarily an agricultural district, portions of the district are within the sphere of influence for the City of Tracy and are, therefore, currently facing pressures from the development community to convert lands currently in agriculture to municipal and industrial (M&I) land uses. BBID's CVP water supply is for irrigation and M&I purposes; however, only a portion of the district's CVP supply is subject to Reclamation's M&I water shortage policy. Under agreements with the City of Tracy, the district provides raw water for treatment and final delivery back to lands within BBID's boundaries. Since the 1990s, approximately 1,500 acres of land have been converted to M&I use. It is possible that, as the City and San Joaquin County continue to develop, the amount of CVP water used for M&I purposes could increase.

Del Puerto Water District

DPWD is primarily an agricultural district. DPWD irrigates 40,000 acres and its water needs are 131,000 AF. Currently, the only CVP supply used for M&I purposes is the one acre-foot of

water supplied to the city landfill each month for dust suppression. All remaining CVP supplies are used for agriculture.

Despite the urban sprawl in the area resulting from the growth of Patterson and Tracy and along the Interstate 5 corridor, DPWD intends to continue to remain primarily an agricultural district. DPWD does not intend to increase the amount of CVP water used for M&I purposes.

There are about 170 water users in the district. More than 30 different crops have been grown commercially in the district over the years. Principal crops grown include row crops (cannery tomatoes, alfalfa, large limas, and dry beans). However, almost half of the agricultural production in the district is permanent crops (almonds, apricots, and walnuts). Typical irrigation methods in the district include primarily furrow irrigation for row crops and sprinkler, sprinkler with less frequent use of drip, and micro-misters for permanent crops. Historically, areas of the district have remained fallow during the growing season (Reclamation 2005).

Mercy Springs Water District

Mercy Springs Water District (MSWD) is entirely an agricultural district. MSWD's current size is 3,618 acres. Because it is located in a rural area away from major development pressures, the conversion from agricultural to M&I uses is unlikely. The crops typically produced in the district include cotton and alfalfa. All administrative functions for the district are currently being provided by PWD. Also, most of the district has been acquired by the Panoche Drainage District for use as a regional drainage management facility on which subsurface drain water is applied to salt-tolerant crops. The CVP contract supply for this area has been assigned to Westlands Water District (WWD). Administrative functions for MSWD are performed by PWD (Reclamation 2005).

Pacheco Water District

The Pacheco Water District's (Pacheco) current size is 4,000 total acres. Pacheco was formed in 1953 for the purpose of obtaining a CVP water supply. Pacheco entered into a long-term contract with Reclamation for 10,080 AF of water supply from the DMC and SLC. Pacheco's agricultural demand is 11,000 AF. Pacheco's CVP supply is their primary water supply though the district also has a surface water supply from the Central California Irrigation District (CCID). The district also owns one groundwater well but does not pump groundwater due to the poor quality of the underlying groundwater.

Panoche Water District

PWD began receiving its first CVP supply water from the Friant Dam of the SJR in 1947 under an interim contract. On August 16, 1955, the PWD entered into a long-term water service contract with Reclamation. This contract provided for the delivery to the PWD of 93,988 AF of water per year from the DMC. PWD's agricultural demands are 106,772 AF. The contract service area is approximately 35,000 acres. The major crops are field crops.

When the PWD's contract with Reclamation became effective, most crops and land developments came to rely on better quality surface water rather than groundwater. The surface water supply was to supplement the groundwater being used. With the exception of drought conditions, almost no groundwater has been utilized in the Panoche.

There are approximately 300 full-time residents living in the PWD service area. This population is comprised primarily of farm labor residents working on adjacent farms. This population has remained virtually the same for over 10 years and is not anticipated to grow due to any non-farming circumstances. PWD supplies about 50 AF of water per year for M&I purposes. PWD does not have any industrial use customers. There is some domestic use which is incidental to agriculture.

San Luis Water District

SLWD is located on the western side of the San Joaquin Valley near the City of Los Banos, in both Merced and Fresno Counties. Construction of the DMC in the 1950s sparked major development of farmland in the SJV that led to the formation of SLWD in January 1951. SLWD's current size is approximately 66,218 acres.

SLWD's current distribution system consists of 52 miles of pipelines, 10 miles of lined canals, and 7.5 miles of unlined canals. About 20,000 acres within the district, referred to as the Direct Service Area (DSA), receive water from 39 turnouts on the DMC and 23 turnouts on the SLC. The DSA is located almost entirely in Merced County. In addition to the DSA, three improvement districts are also served through distribution systems branching off the SLC. Both Improvement Districts 1 and 2 are primarily located within Fresno County; Improvement District 3 is located primarily in Merced County. The current population within SLWD is approximately 700, with most individuals residing in the community of Santa Nella, located in the extreme northern portion of the district.

Although water deliveries by the SLWD historically have been almost exclusively used for agricultural use, substantial development in and around the cities of Los Banos and Santa Nella have resulted in a shift of some water supplies to M&I use. The SLWD currently supplies approximately 800 AF/yr to approximately 1,300 homes and businesses. M&I demands within the district are expected to increase.

M&I use primarily occurs in the northern section of the district, which is located in Merced County. It is anticipated that the conversion from agricultural use to M&I use will occur mostly in this section of the district. Approximately 10,000 acres identified as potential development locations are currently in the planning stages within Merced County and the district. Much of the land targeted for M&I development is currently unused for irrigated agriculture.

West Stanislaus Irrigation District

WSID was formed November 29, 1920. WSID serves an area that is unincorporated and agricultural, located west of the San Joaquin River, northwest of the City of Patterson, and includes the unincorporated communities of Westley, Grayson and Vernalis. A small portion of the district extends into San Joaquin County. WSID's boundaries include approximately 21,676 acres.

WSID provides its customers with irrigation water for agricultural purposes. This water is provided via several sources including surface water from the Tuolumne and San Joaquin Rivers, groundwater from four deep wells within WSID's boundaries, and importing water from the DMC as part of the CVP.

WSID, under a water rights agreement, also sells irrigation water to 13 landowners, which includes approximately 2,203 irrigable acres outside its sphere of influence in the “White Lake” area (north of the unincorporated community of Grayson) [Stanislaus 2009].

CVP Facilities

The DMC, the second largest of the CVP waterways, was completed in 1951. It includes a combination of both concrete-lined and earth-lined sections and is about 117 miles in length. It carries water southeasterly from the Jones Pumping Plant, located near Tracy, California, into the DMC along the west side of the SJV for distribution to refuges, irrigation districts, and cities. The canal transports water to the Mendota Pool. The DMC is divided into the upper and lower portions. The dividing point is Check 13 near Santa Nella, California. Check 13 is the intake to the O’Neill Forebay and San Luis Reservoir which are connected to the SWP. Capacity in the DMC is restricted by the physical limitations of the canal and the pumping limits of the Jones Pumping Plant (Reclamation 2007). The Mendota Pool is the terminus for the DMC (Check 21) and is located at the confluence of the San Joaquin River (SJR) and the North Fork of the Kings River, approximately 50 miles west of the City of Fresno.

The DMC provides for the transport of water through the central portion of California's Central Valley and acts as a hub around which the CVP and SWP revolve. The DMC is part of the Delta Division facilities of the CVP. The Delta Division facilities transfer water from the Sacramento River to bolster irrigation supplies to lands formerly dependent on water from the SJR or groundwater. The facilities also provide for the transport of water through both the Sacramento-SJR and the San Francisco Bay-Delta Estuary and for the delivery of water to CVP and SWP contractors in the SJV and Southern California SWP contractors (Reclamation 2007).

San Joaquin River Exchange Contractors

The Exchange Contractors consist of CCID, Columbia Canal Company, Firebaugh Canal Water District, and San Luis Canal Company (Figure 3-1). The Exchange Contractors hold historic water rights to the SJR. Their service area is located on the west side of the SJR Valley. In exchange for the regulation and diversion of the SJR at Millerton Lake (Friant Division), Reclamation agreed to supply water to the Exchange Contractors from the CVP’s Delta supply. The Exchange Contractors provide water delivery to over 240,000 acres of irrigable land on the west side of the SJV, spanning a distance roughly from the town of Mendota in the south to the town of Crows Landing in the north. Conveyance and delivery systems generally divert water from the CVP’s DMC and Mendota Pool to convey water to customer delivery turnouts and at times discharge to tributaries of the SJR. Deliveries include conveyance of water to wildlife areas.

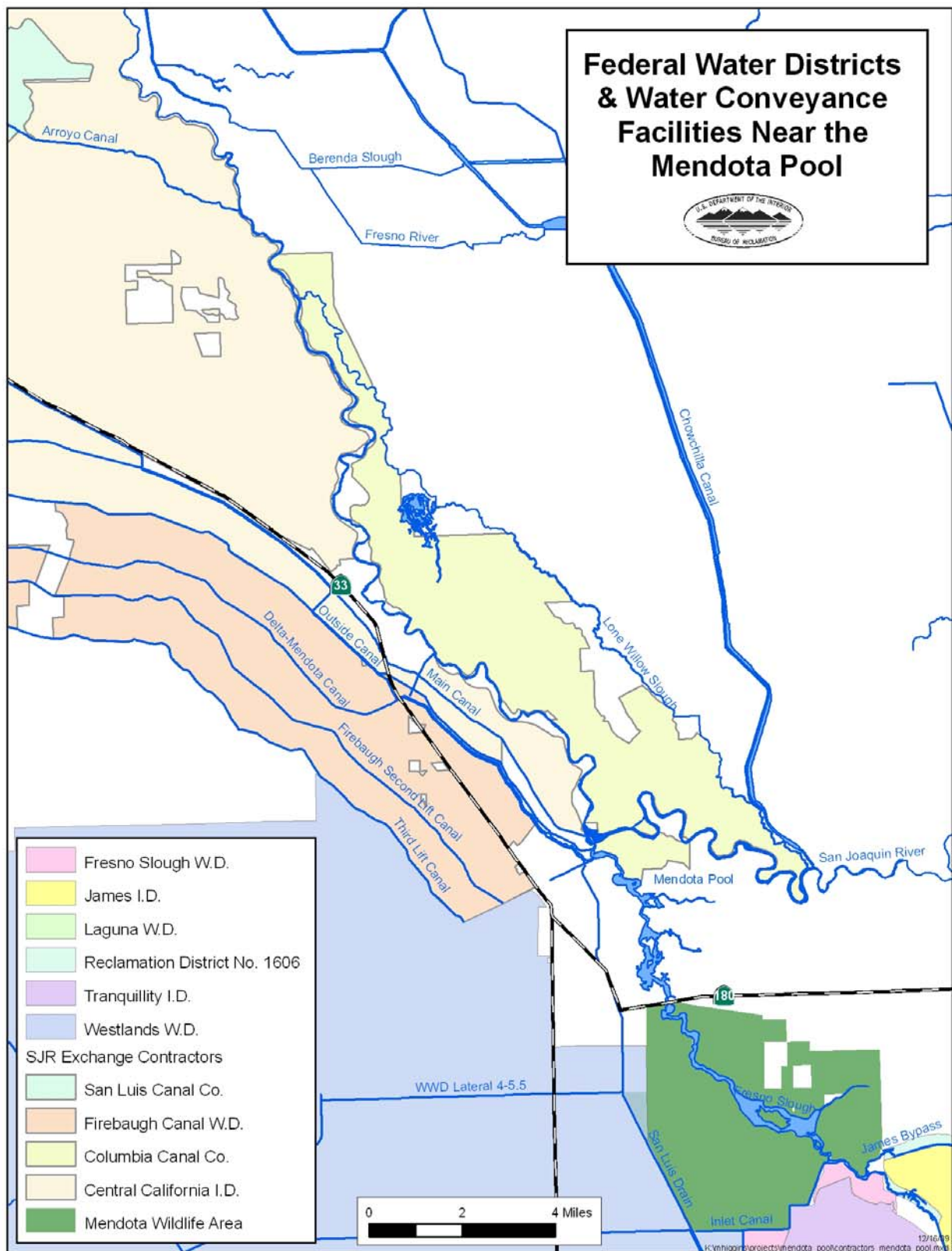


Figure 3-1 Federal Water District and Water Conveyance Facilities Near the Mendota Pool

Mendota Pool

Mendota Pool is a re-regulating reservoir for more than one million AF of CVP water pumped from the Delta and delivered by the DMC. The Mendota Pool is impounded by Mendota Dam, which is owned and operated by CCID. Currently, Mendota Pool is sustained by the inflow from the DMC, which typically conveys 2,500 to 3,000 cubic feet per second (cfs) to the Mendota Pool during the irrigation season. SJR water is only conveyed to the Mendota Pool during periods of flood flow. Mendota Pool extends over 5 miles up the SJR Channel and over 10 miles into Fresno Slough and varies from less than one hundred to several hundred feet wide. Water depth varies but averages about 4 feet. Mendota Pool contains approximately 8,000 AF of water and has a surface area of approximately 2,000 acres when full. It is the largest body of ponded water on the SJV basin floor.

The Mendota Pool is located at the confluence of the SJR and Fresno Slough. The Mendota Pool receives water from the SJR, the Delta via the DMC, groundwater pumping from the Mendota Pool Pumpers, and intermittently from the Kings River drainage in the south via the James Bypass into Fresno Slough. Water from the Mendota Pool is diverted for a variety of agricultural, municipal, and habitat management uses. Mendota Wildlife Area (Mendota WA) receives water from the Mendota Pool via Fresno Slough, which is managed by CCID as a water conveyance facility. Gates and pumps divert water from Fresno Slough to Mendota WA.

In addition to Mendota WA, several CVP Settlement Contractors and SJR Exchange Contractors (Exchange Contractors) rely on Mendota Pool for water deliveries.

Water quality conditions in the Mendota Pool depend on inflows from the DMC, groundwater pumped into Mendota Pool by the Mendota Pool Pumpers and, to a limited extent, SJR inflows (See Figure 3-2). Water quality in the SJR varies considerably along the river's length. Above Millerton Lake and downstream towards Mendota Pool, flows are infrequent, but the quality of water released from Friant Dam is generally excellent. The reach from Gravelly Ford to Mendota Pool (about 17 miles) is perennially dry except during flood control releases from Friant Dam, although that is projected to change as a result of the SJR Restoration Program. During the irrigation season, most of the water released from the Mendota Pool to the SJR and to irrigators is imported from the Delta via the DMC. This water has higher concentrations of total dissolved solids (TDS) than water in the upper reaches of the SJR, and might be affected by runoff and seepage into the canal.

An additional source of water in Mendota Pool is from adjacent land owners pumping well water into Mendota Pool and taking delivery of it in a more convenient location, at convenient timing (but within 60 days of pumping in) and at differing water quality. In 2007, these adjacent landowners pumped 7,423 AF into Mendota Pool.

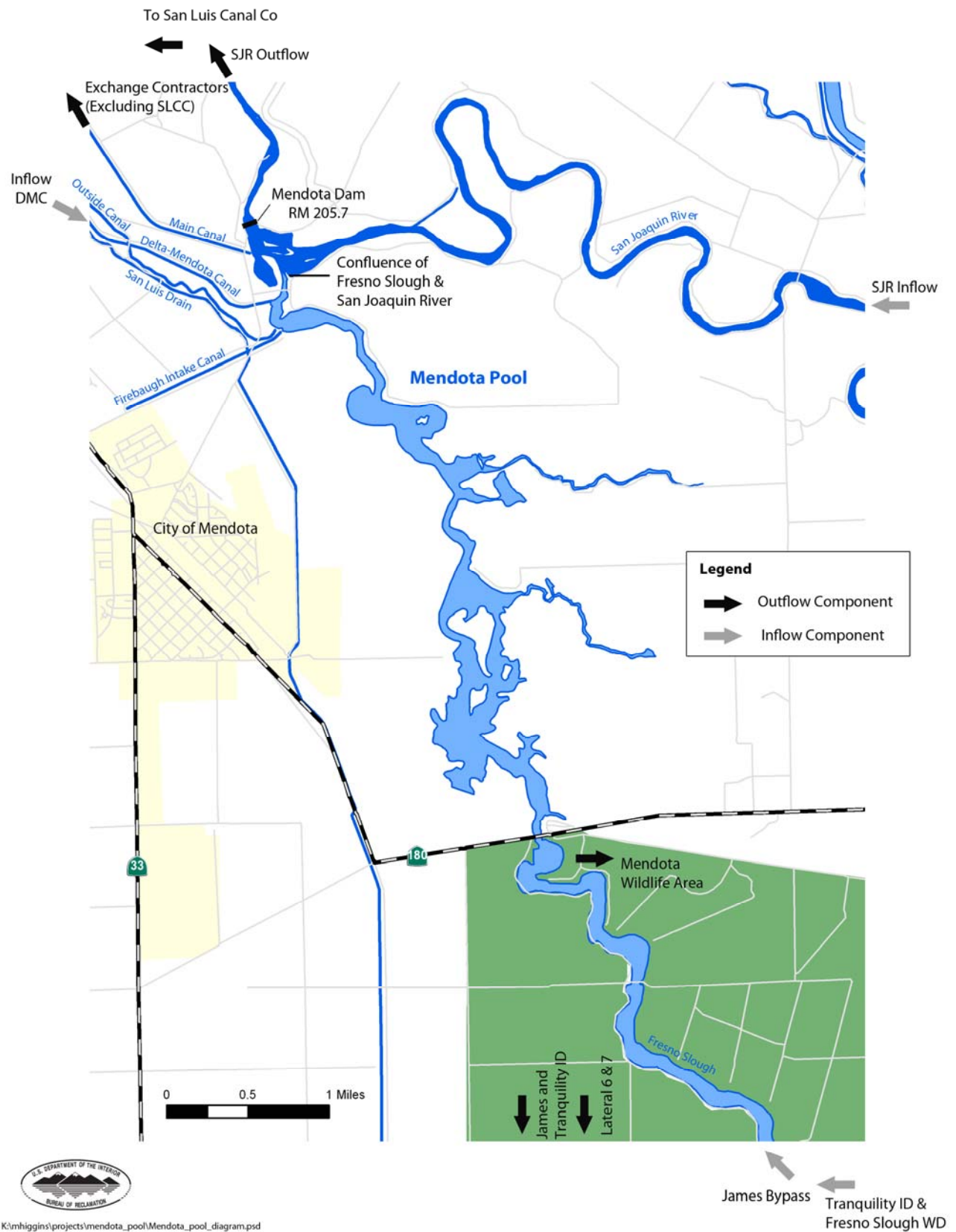


Figure 3-2 Mendota Pool

Groundwater Resources

Two primary hydrologic divisions of the SJV are agreed upon by DWR, the State Board, and the U.S. Geological Survey: 1) the SJR Hydrologic Region covering approximately 15,200 square miles and includes all of Calaveras, Tuolumne, Mariposa, Madera, San Joaquin, and Stanislaus counties, most of Merced and Amador counties, and parts of Alpine, Fresno, Alameda, Contra Costa, Sacramento, El Dorado, and San Benito counties; and 2) the Tulare Lake Hydrologic Region covering approximately 17,000 square miles and includes all of Kings and Tulare counties and most of Fresno and Kern counties (DWR 2003).

Groundwater quality conditions vary throughout the SJR Hydrologic Region. Salinity (expressed as TDS), boron, nitrates, arsenic, selenium, and mercury are parameters of concern for agricultural and municipal uses throughout the region. Of particular concern on the west side are TDS and selenium.

Groundwater zones commonly used along a portion of the western margin of the SJV have high concentrations of tds, ranging from 500 miligram per liter (mg/L) to greater than 2,000 mg/L (Bertoldi et al. 1991). The concentrations in excess of 2,000 mg/L commonly occur above the Corcoran Clay layer. These high levels have impaired groundwater for irrigation and municipal uses in the western portion of the SJV.

High selenium concentrations in soils of the west side of the SJR Hydrologic Region are of great concern because of their potential to leach from the soil by subsurface irrigation return flow into the groundwater and into receiving surface waters. Selenium concentrations in shallow groundwater along the west side have been highest in the central and southern area south of Los Banos and Mendota with median concentrations of 10,000 to 11,000 micrograms per liter (Bertoldi et al. 1991).

All of the sub-basins within the SJR Hydrologic Region have experienced some overdraft (DWR 2003).

According to DWR Bulletin 118 (DWR 2003), groundwater provides approximately 30 percent of the total supply for the SJR Hydrologic Region. However, the amount of groundwater use within the region varies widely, both between different areas and from one year to the next.

In the southern region of the SJV, several conjunctive use projects are operating or are in proposal stages. The purposes of each project vary and include recharge of overdrafted basins using purchased surface water, cooperative banking concepts that rely on groundwater in dry years and surface water in wet years, and temporary storage of surface water entitlements for later withdrawal.

The western SJV region has drainage problems caused by shallow clay layers of low permeability that limit recharge to groundwater. In addition, elevated concentrations of salinity, selenium, and boron exist in the semi-perched aquifer zone due to leaching from naturally occurring saline deposits from the Coast Range and from accumulated salts in the root zones of irrigated cropland. The SJV Drainage Program, established in 1984, published its recommendations for managing the drainage problem in 1990 (SJVDP 1990), culminating in a Memorandum of Understanding (MOU) in 1991 that allows Federal and State agencies to

coordinate activities for implementing the plan. East of the SJR, the valley is underlain by older sediments. The shallow groundwater quality is generally very good in this portion of the valley.

In the areas west of the SJR, unconfined groundwater generally flows from the southwest toward the northeast, although groundwater pumping and irrigation complicates and changes local flow directions with time. Aquifer response to pumping and irrigation is relatively rapid, resulting in local changes in groundwater flow direction as associated temporary cones of depression and recharge mounds form and dissipate.

AB 3030 (California Water Code Section 10750 et seq.) allows certain defined existing local agencies to develop a groundwater management plan in groundwater basins defined in DWR Bulletin 118. The groundwater management plan applies to groundwater usage by the Exchange Contractors. This act establishes a voluntary program whereby local water agencies may establish programs for managing their groundwater resources. The Exchange Contractors adopted a Groundwater Management Plan in October 1997 (Exchange Contractors 1997). The plan commits the Exchange Contractors to keeping records of groundwater pumping and conducting periodic monitoring of groundwater levels and quality throughout their service area.

Fresno County regulates the extraction and transfer of groundwater within the county under Title 14, Chapter 3 of the Fresno County Ordinance Code. Fresno County and the Exchange Contractors have an MOU that exempts the Exchange Contractors from regulation of groundwater resources within Fresno County. Fresno County and the Exchange Contractors agree that agricultural production is vital to the county and that groundwater, used conjunctively with surface water, is essential for continued agricultural production. The MOU specifically exempts the Exchange Contractors from the newly adopted Title 14, Chapter 3 of the Fresno County Ordinance Code, in accordance with Section 14.03.05E of the code. Fresno County recognizes that the Exchange Contractors' management, protection, and control of groundwater resources are consistent with Title 14, Chapter 3; therefore, the MOU exempts the Exchange Contractors from this code requirement (Fresno County and Exchange Contractors 2001).

Generally, groundwater development in the Exchange Contractors' service area has not influenced shallow groundwater interaction with surface water bodies. The depth to shallow groundwater, less than 10 feet deep, has been monitored intensively since 1984. The Exchange Contractors report that no trend exists regarding a significant lowering of these groundwater levels during years of heavy pumpage (C. White pers. Comm. 2004).

The calculated change in groundwater storage, illustrated in Table 3-3, shows an average annual decrease of 3,546 AF over the 10-year period, representing approximately 0.31 percent of the total average yearly inflow of over 1,000,000 AF. It should be noted that the change in groundwater storage is not directly measured. It is calculated from the differences in groundwater elevations measured in a network of wells. Thus, the value must be considered an approximation. In this context, a difference of 0.31 percent is within the potential error in the calculation.

Table 3-6 Groundwater Balance in the Exchange Contractors Service Area Overall Groundwater Balance, 1993-2002

Year	Total Inflows (AF)	Total Outflows (AF)	Groundwater Pumping (AF)	Change in Groundwater Storage (AF)
1993	1,205,765	1,236,292	136,388	-30,527
1994*	941,575	1,151,158	225,750	-209,580
1995	1,234,440	1,190,328	102,796	44,112
1996	1,301,032	1,201,994	121,050	99,038
1997	1,153,560	1,195,461	126,047	-49,242
1998	1,339,253	1,243,397	37,686	111,198
1999	959,686	1,090,646	99,964	-86,992
2000	1,102,669	1,081,140	120,738	40,622
2001	1,084,402	1,074,070	134,212	6,105
2002	1,008,553	1,067,654	175,894	39,808
Average 1993-2002	1,133,094	1,153,214	128,053	-3,546

Source: Exchange Contractors 2003.

*Critically dry year (Reclamation 2004)

The long-term hydrographic record for the Exchange Contractors' service area was reviewed by Schmidt (CCID 1997). Schmidt's review shows that groundwater is in balance or is rising.

Regional Monitoring Programs

Several monitoring programs are currently occurring in the vicinity of the Proposed Action. These monitoring programs are being undertaken by Reclamation, Central Valley Regional Water Quality Control Board, U.S. Geological Survey, California Department of Fish and Game (CDFG), SLDMWA, WWD, Tulare Irrigation District, and James Irrigation District. A brief summary of these monitoring programs is provided in this section. In addition, several counties have adopted groundwater management plans and/or ordinances (see Table 3-5) [Central Valley Regional Water Quality Control Board 2009].

Most groundwater management ordinances restrict out-of-county groundwater uses. Some groundwater management plans specify trigger levels for groundwater levels in the Subbasin management objectives (BMOs) to prevent overdraft or other water quality problems. However, in many cases, there are no mechanisms to address the non-compliance with the BMOs. The current groundwater ordinances, AB 3030 groundwater management plans, and local BMO activities, which were intended for localized groundwater management, appear not to be well suited for implementing regional groundwater management. These limitations can hinder the effectiveness of conjunctive management in the State (DWR 2009b).

**Table 3-7 San Joaquin Valley Groundwater Basins (DWR 2003), Ordinances, and Districts
San Joaquin Valley Hydrologic Region**

County	Subbasin Name	Ordinance	Districts overlying County & Basin
Madera	Madera Subbasin ² , Chowchilla Subbasin, Delta-Mendota ³	Yes. Title 13, Water and Sewers, 13.100.050, Ord. 573B § 1(part), 2001. ¹ Requires permit to export groundwater .	None but Delta-Mendota also underlies Fresno, Stanislaus, and Merced Counties. So, there is a connection.
Fresno	Delta-Mendota ³	Yes.	San Luis WD, Panoche WD
San Joaquin	Tracy Subbasin ⁴	Yes.	Byron Bethany ID, West Stanislaus ID, Banta Carbona ID, Del Puerto WD
Stanislaus	Delta-Mendota ³	Groundwater management Plan	West Stanislaus ID, Del Puerto WD
Merced	Delta Mendota ³	No.	Del Puerto WD, San Luis WD, Pacheco WD, Panoche WD

Tulare Lake Basin Hydrologic Region

County	Subbasin	Ordinance	Districts overlying County & Subbasin
Kings	Tulare Lake Subbasin ⁵	No.	Westlands DD #1
Fresno	Madera Subbasin ²	No.	San Luis WD, Panoche WD, Pacheco WD, Mercy Springs WD, Westlands DD #1

Sacramento Valley Groundwater Basin

County	Subbasin	Ordinance	Districts overlying County & Subbasin
Contra Costa	Solano Subbasin	No.	Northwestern part of Byron Bethany ID

¹ Madera County 2009.

² Madera County has adopted an ordinance to provide regulatory control over exporting of groundwater, groundwater banking, and importing of groundwater for the purpose of groundwater banking.

³ Fresno County has a Groundwater Management Ordinance restricting the extraction and transfer of groundwater outside of the County. It requires that the groundwater resources of Fresno County be protected from harm resulting from extraction and transfer of groundwater for use on lands outside the county and consequential transfer of surface water outside of the county due to extraction. A County-issued permit is required for groundwater transfer, directly or indirectly, outside of the County, unless the action is exempted or a permit first obtained.

⁴ San Joaquin County adopted a groundwater management ordinance in 1996 and an amendment in 2000, regarding extraction and exportation of groundwater from San Joaquin County. The ordinance requires that a permit be obtained for use of extracted groundwater outside the County boundaries.

⁵ There are no known pertinent ordinances or regulations that affect groundwater in the Tulare Lake Subbasin.

The SLDMWA adopted an AB3030 groundwater management plan. The SLDMWA is composed of the Banta-Carbona ID, City of Tracy, Del Puerto WD, Patterson WD, Plain View WD, San Joaquin County FC&WCD, West Side ID, and West Stanislaus ID.

The groundwater pumping under the Groundwater Pump-in Program for the last 10 years (Table 3-5) shows that groundwater pumping has increased substantially beginning with drought year 2008. It also correlates with the pumping curtailments that began in 2007 in response to Federal Judge Oliver Wanger's Delta Smelt Interim Remedy Order.

Table 3-8 Past Groundwater Pumping Under the Groundwater Pump-in Program

CVP District	2009*	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999
BCID	9,451	8,425									
BBID	2,539										
DPWD	7,061	2,029				431	235	980	2,682	1,724	
MSWD	6,584										
Pacheco											
Panoche	2,796	7,184				233	265	370	1,214	1,243	
SLWD	5,040	2,909				1,097	1,401	4,176	4,650	5,485	1,500
WSID	4,370										
TOTAL	37,841	20,547				1,761	1,901	5,526	8,546	8,452	1,500
10-YR TOTAL	86,074										

Data based on water year (March through February) deliveries

Non-CVP pumped quantities are in AF

*2009 data retrieved through January 2010

Sump Monitoring Reclamation has been monitoring a series of six sumps located between Russell Avenue at MP 97.68 and Washoe Avenue at MP 110.12. This program has been ongoing since 1986. Monitoring frequencies and parameters measured have changed over time. Since 1998, the sumps have been sampled twice yearly for metals, common cations, and common anions. Selenium and electrical conductivity are measured weekly in all six sumps. Water from these sumps is periodically discharged to the DMC. Reclamation is evaluating other methods for disposing of this sump water.

Warren Act Pump-Ins Reclamation requires the monitoring of water quality in wells that discharge directly into the DMC. Each well is sampled prior to entry into the program and subsequently every three years. Parameters measured include Title 22 metals and pesticides.

Selenium Monitoring A selenium monitoring program was initiated in July 2002. Daily composite samples for selenium and TDS are collected using an autosampler at three locations along the DMC: at the headworks (MP 3.5), Check 13 (O'Neill Forebay), and Bass Avenue (DMC terminus).

Drinking Water Quality A fourth program was initiated in November 2002 at the request of the California Department of Health Services. This program collects monthly samples from the DMC at McCabe Road near Check 13. The samples are analyzed for many constituents including alkalinity, total organic carbon, and coliforms.

3.2.2 Environmental Consequences

No Action

Under the No Action Alternative, no Exchange Agreements or Warren Act contracts would be issued to any San Luis Unit or Delta Division contractor. The DMC would continue to be used to provide CVP water to CVP contractors. Under the No Action Alternative, there would be no

change to CVP facilities and operations. Therefore, no non-CVP water would be conveyed in the DMC. Under the No Action Alternative water districts could continue to pump groundwater. Effects to groundwater overdraft would continue.

Proposed Action

Surface Water The Proposed Action would allow non-CVP water to be conveyed and stored in 2010 in CVP facilities. This would allow non-CVP water to be delivered to other areas to supplement diminished CVP water supplies in 2010 and 2011. No new facilities would be constructed as a result of the Proposed Action. There would be no construction or modification to the DMC and the capacity of the facility would remain the same. The Proposed Action would not interfere with the normal operations of DMC nor would it impede any SWP or CVP obligations to deliver water to other contractors or to local fish and wildlife habitat. Furthermore, the Proposed Action would not interfere in the quantity or timing of diversions from the Sacramento-San Joaquin Bay Delta. CVP operations and facilities would not vary considerably under either alternative.

Groundwater The total quantity of groundwater that can be pumped into the DMC under the Proposed Action would be limited to 50,000 AF, and that quantity would be divided among the San Luis Unit and Delta Division contractors. However, each district would be limited to pumping a quantity below the "safe yield" as established in the groundwater management plan, in order to prevent groundwater overdraft and avoid adverse impacts. Safe yield is defined as the amount of groundwater that can be continuously withdrawn from a basin without adverse impact. The amount of water pumped into the DMC would be credited to that district. The quantity of groundwater pumped into the DMC by a district would then be delivered back into the district and used for irrigation purposes throughout the originating district. Though some of the water used for irrigation would be used up by evapotranspiration and evaporation, some would also seep back into the ground.

Additionally, water in each well must meet water quality standards prior to approval for conveyance, and the monitoring of groundwater quality would continue throughout the contract water year. If a well to be used for pumping water into the DMC does not meet the water quality standards, the district could not pump water from that well into the DMC under the Warren Act contract. The Warren Act contract provides for routine testing of each well by Reclamation and SLDMWA to confirm that the groundwater still meets standards. The contract also allows the Contracting Officer to stop a well that fails to meet standards. Reclamation and SLDMWA staff would monitor salinity and selenium in the canal to identify degradation caused by the groundwater, and would work with the SLDMWA and districts to modify or restrict pumping to improve water quality. The groundwater monitoring implemented as part of the Proposed Action would provide specific and detailed information about the effects of groundwater pumping in the area.

Because the DMC and Mendota Pool are sources that the Exchange Contractors (Appendix C – approval letter) divert water from, they would be monitoring the water quality at Mendota Pool. Therefore, there would be no adverse impact due to the Proposed Action.

3.3 Land Use

3.3.1 Affected Environment

Banta-Carbona Irrigation District

BCID is entirely an agricultural district and does not supply or intend to supply any water for M&I use. BCID extends from the City of Tracy to the San Joaquin-Stanislaus County line near the town of Vernalis. BCID's current size is 14,000 acres and its water needs are 47,000 AF. The major crops are primarily almonds and walnuts, with smaller amounts of apricots, apples, and vineyards; some areas have been planted with grapes over the last few years.

As the City of Tracy and the Interstate 5 corridor continue to grow, attachments and detachments would continue. Also, new areas that may require water for M&I purposes would be detached from the district. Currently, a few parcels within the district are targeted for detachment and would be annexed to the City of Tracy. This detachment process has been on-going in the district. Whenever a new urban expansion is planned, the land is deleted from district boundaries. BCID has assigned 5,000 AF per year (AF/y) through an assignment of its CVP supply to the City of Tracy. Therefore, while vulnerable to development pressures along the Interstate 5 corridor, BCID is expected to remain an entirely agricultural district.

Byron Bethany Irrigation District

BBID is primarily agricultural. BBID's current size is 2,700. Its major crops are pasture. In 1990, a small portion of the district's CVP supply was allocated for M&I use to service commercial and residential development. The water provided by the BBID was treated and delivered by the City of Tracy. Since 1990, approximately 1,500 acres of land have been converted to M&I use. By 2005, a portion of Tracy Hills was annexed into BBID (City of Tracy 2007).

The water allocated for converted land would continue to be used to serve the new land use through the City of Tracy water supply system. It is possible that as Tracy continues to grow, the amount of CVP water used for M&I purposes could increase. It is also possible that the anticipated growth could result in some areas currently within the district being detached and annexed by the City of Tracy. BBID has informed Reclamation of its plan to transfer a portion of its CVP supply to the City of Tracy by 2025.

Row crops produced within the district are primarily alfalfa. Permanent crops include almond and cherries. There is also some dry farming in the district. Typical irrigation methods include primarily furrow and border irrigation and sprinklers.

Del Puerto Water District

DPW) is primarily an agricultural district. DPWD irrigates 40,000. Currently, the only CVP supply used for M&I purposes is the one acre-foot of water supplied to the city landfill each month for dust suppression. All remaining CVP supplies are used for agriculture.

Despite the urban sprawl in the area resulting from the growth of Patterson and Tracy and along the Interstate 5 corridor, DPWD intends to continue to remain primarily an agricultural district. DPWD does not intend to increase the amount of CVP water used for M&I purposes.

There are about 170 water users in the district and more than 30 different crops have been grown commercially in the district over the years. Principal crops grown include row crops (cannery tomatoes, alfalfa, large limas, and dry beans). However, almost half of the agricultural production in the district is permanent crops (almonds, apricots, and walnuts). Typical irrigation methods in the district include primarily furrow irrigation for row crops and sprinkler, sprinkler with less frequent use of drip, and micro-misters for permanent crops. Historically, areas of the district have remained fallow during the growing season (Reclamation 2005).

Mercy Springs Water District

MSWD is approximately 3,390 acres in size, of which 3,336 acres are irrigable. MSWD is entirely an agricultural district. The crops typically produced in the district include cotton and alfalfa. All administrative functions for the district are currently being provided by Panoche. Also, most of the district has been acquired by the Panoche Drainage District for use as a regional drainage management facility on which subsurface drain water is applied to salt-tolerant crops (Reclamation 2005c).

Pacheco Water District

PWD's current size is approximately 4,730 acres in size, of that 4,242 acres are. Crops grown in the district consist of cotton, melons, tomatoes and asparagus (Reclamation 2007).

Panoche Water District

Panoche is approximately 38,000 acres in size, of which approximately 37,000 acres are irrigated. Current cropping patterns in the district include cotton, tomatoes, melons grapes, and almonds with cotton and tomatoes representing two thirds of the crops (Reclamation 2007).

San Luis Water District

SLWD is located on the western side of the SJV near the City of Los Banos, in both Merced and Fresno Counties. Construction of the DMC in the 1950s sparked major development of farmland in the SJV that led to the formation of SLWD in January 1951. SLWD's current size is approximately 66,218 acres.

The southern section of the district located in Fresno County is primarily agricultural. The land is planted with either row crops, including cotton and melons, or permanent crops, including primarily almonds. In recent years, some parcels in this area of the district have not been farmed because they are of marginal quality or have high water costs or drainage problems.

West Stanislaus Irrigation District

WSID irrigates approximately 22,500 acres of cropland through 84 miles of laterals and sublaterals. Although Delta water typically is of better quality than San Joaquin River water WSID typically diverts its maximum allocation from the San Joaquin River, largely on account of the lower cost (San Joaquin River Dissolved Oxygen Technical Working Group 2002).

No Action

Under the No Action Alternative, no Exchange Agreements or Warren Act contracts would be issued that would allow this non-CVP water to be conveyed and stored in CVP facilities. Reclamation anticipates another dry year. In the dry year, there could be some adverse impacts to crops if supplemental supplies of water are not found. According to SLDMWA (Mizuno personal communication 2009), under the No Action Alternative an estimated total of 30,000

acres (DPWD – 11,000 acres, SLWD – 8,000 acres, and PWD – 11,000 acres) of additional land would be fallowed.

Proposed Action

The Proposed Action would utilize CVP water to allow district agricultural lands to remain in production, and to convey non-CVP water to other receiving areas to support existing farmlands and minimize the potential for fallowing agricultural land. No new lands would be cultivated with this water. The conveyance of the non-CVP water through CVP facilities would not contribute to changes in land use. The Proposed Action would not increase or decrease water supplies that would result in additional homes to be constructed and served. The approval to be covered under this EA would be for contract years 2010 through 2011.

3.4 Biological Resources

3.4.1 Affected Environment

Central Valley Refuges

Section 3406(d) of the CVPIA requires the Secretary of Interior to provide reliable year-round water supplies of suitable quality, meeting peak seasonal needs, to maintain and improve wetland habitat areas on certain refuges in the Central Valley of California in the National Wildlife Refuge System, State wildlife management areas, and Grassland Resource Conservation District.

These refuges include Mendota WA which is located in the SJV, 30 miles west of Fresno, California. Under normal operating conditions, water is delivered to Mendota WA via gravity flow and pumping from Mendota Pool at Fresno Slough.

The quantity, quality, and timing of water deliveries to refuges identified in CVPIA are in accordance with parameters specified in Reclamation's Report on Refuge Water Supply Investigations, Central Valley Hydrologic Basin, California and the San Joaquin Basin Action Plan/Kesterson Mitigation Action Plan Report, which were incorporated by reference into CVPIA. The reports specified the following two primary levels of water supplies:

- Level 2
- Level 4

Level 2 water supply is identified as a firm, average historical annual water supply required to manage for minimal wetlands maintenance and wildlife habitat development. Level 2 water generally comes from CVP yield. Level 4 water supply is identified as the amount of water required to manage for optimal wetlands and wildlife habitat development. At 12,425 acres, Mendota WA is the largest publicly owned and managed wetland in the SJV. Established between 1954 and 1966, the wildlife area is adjacent to Fresno Slough and the 900-acre Alkali Sink Ecological Reserve. Approximately 8,300 acres of wetlands are maintained at Mendota WA, including almost 6,800 acres of seasonal wetlands. Mendota WA is owned and managed by CDFG.

To implement the refuge water supply provisions of CVPIA, Reclamation entered into a contract, titled "Contract Between the United States and State of California for Water Supply to Los Banos, Volta, North Grasslands and Mendota Wildlife Areas, January 19, 2001" otherwise referred to as "Water Supply Contract", with the CDFG providing for firm CVP water deliveries

to the wildlife areas owned/managed by CDFG within the San Joaquin Basin. Consistent with the Water Supply Contract, the following is the breakout for Level 2 and incremental level allocations from the total Full Level 4 water allocation of 29,650 AF for Mendota WA:

- Level 2 = 27,594 AF/y
- Incremental Level 4 = 2,056 AF/y

CVP water is typically conveyed to Mendota WA using the DMC and Mendota Pool. Mendota Pool floods a portion of SJR and Fresno Slough. Water is subsequently pumped from Fresno Slough to Mendota WA and also conveyed from Fresno Slough to Mendota WA by gravity flows. Mendota WA is dependent on gravity flows from Fresno Slough to provide water deliveries to approximately 3,000 acres of wetlands adjacent to both west and east sides of the slough. Fresno Slough is allowed to backflow (gravity flow) through certain water control structures onto Mendota WA. Currently, there are no other existing means to facilitate water delivery to those specific 3,000 wetland acres. Mendota WA is also dependent on adequate water level at Fresno Slough to facilitate pumping that serves many areas of Mendota WA as well.

Detailed baseline habitat information was provided in EA/FONSI-08-98, *Approval of One-Year Temporary Warren Act Contracts for the Conveyance of Non-CVP Water in the Delta-Mendota Canal*, EA-08-98, February, 27, 2009 and is hereby incorporated by reference. That information will not be repeated here.

The habitats associated with the Proposed Action area include non-native grassland, agricultural, valley foothill riparian, alkali desert scrub, ruderal, and fresh emergent wetlands.

Threatened and Endangered Species

The following list was obtained on February 16, 2010, by accessing the USFWS Database (Document Number 100107033329). The list is for the following USGS quadrangles, which overlapped the districts in the San Luis Unit and Delta Division: Brentwood, Broadview Farms, Byron Hot Springs, Charleston School, Chounet Ranch, Clifton Forebay, Crows Landing, Dos Palos, Hammonds Ranch, Howard Ranch, Laguna Seca Ranch, Los Banos, Los Banos Valley, Midway, Newman, Orestimba Peak, Ortigalita Peak NW, Oxalis, Patterson, San Luis Dam, Solyo, Tracy, Vernalis, Volta, Westley, and Woodward Island. Reclamation also queried the California Natural Diversity Database (CNDDB), and combined the USFWS and CNDDB information with information in Reclamation's files to create the table.

Table 3-9 Threatened and Endangered Species List

Species	Status	Habitat	*Occurrence in the Study Area
PLANTS			
Large-flowered fiddleneck (<i>Amsickia grandiflora</i>) Critical habitat	FE, CE	Cismontane woodland, valley and foothill grassland in various soils.	Possible. In undisturbed areas of San Joaquin County.
Contra Costa goldfields (<i>Lasthenia conjugens</i>), Critical habitat	FE	Vernal pools within open grassy areas in woodlands and valley grasslands from sea level to 1,500 feet.	Absent. The study area is outside of the known range of this species.
San Joaquin woolly-threads (<i>Monolopia congdonii</i>)	FE	Chenopod scrub, valley and foothill grasslands. This species is found only in the southern SJV and surrounding hills. It grows on neutral to subalkaline soils. On the SJV floor, it typically is found on sandy or sandy loam soils.	Present. CNDDDB records indicate extant populations occur within Fresno County.
INVERTEBRATES			
Vernal pool tadpole shrimp (<i>Lepiderus packardii</i>) Critical habitat	FE	The vernal pool tadpole shrimp is currently distributed across the Central Valley of California and in the San Francisco Bay area. Inhabits highly turbid vernal pools.	Present. Vernal pool habitats within the study area may support populations of this species. CNDDDB records indicate that this species is presumed extant.
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>) Critical habitat	FT	Primarily found in vernal pools, may use other seasonal wetlands.	Present. Although very little remains of the vast acreages of vernal pool habitat that once occurred in the region, some vernal pool habitats are still present. CNDDDB records indicate that this species is presumed extant in Stanislaus, Contra Costa, and San Joaquin Counties.
Longhorn fairy shrimp (<i>Branchinecta longiantenna</i>) Critical habitat	FE	Endemic to the eastern margin of the central coast mountains in seasonally astatic grassland vernal pools.	Present. Vernal pool habitats within the study area may support populations of this species. CNDDDB records indicate that this species is presumed extant.
Conservancy fairy shrimp (<i>Branchinecta conservatio</i>) Critical habitat	FE	Vernal pool habitats. The species is currently known from several disjunct populations: the Vina Plains in Tehama County, south of Chico in Butte County, the Jepson Prairie Preserve and surrounding area in Solano County, Sacramento National Wildlife Refuge in Glenn County, Mapes Ranch west of Modesto, San Luis National Wildlife Refuge and the Haystack Mountain/Yosemite Lake area in Merced County, and two locations on the Los Padres National Forest in Ventura	Present. Vernal pool habitats within the study area may support populations of this species. CNDDDB records indicate that this species is presumed extant.

		County.	
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	FT	Lives in mature elderberry shrubs of California's Central Valley and Sierra Foothills.	Present. The host plant for this species is common throughout the region. CNDDDB records indicate that this species is presumed extant.
FISH			
Southern Distinct Population of North American green sturgeon (<i>Acipenser medirostris</i>)	FT	Anadromous and highly marine-oriented; spawns mainly in Sacramento River. No evidence of occurrence in San Joaquin River system. Juveniles salvaged in South Delta pumping plants in summer.	Absent. No natural waterways within the species' range would be affected by the proposed action.
Delta smelt (<i>Hypomesus transpacificus</i>)	FT	Endemic to the Delta. Found in SJR up to Mossdale in some years and in Sacramento River up to Rio Vista where salinity is 2-7 ppt.	Absent. No natural waterways within the species' range would be affected by the proposed action.
Central Valley steelhead (<i>Oncorhynchus mykiss</i>)	FT	Anadromous species in cold waters.	Absent. No natural waterways within the species' range would be affected by the proposed action.
Chinook salmon – Central Valley spring-run (<i>Oncorhynchus tshawytscha</i>)	FE	Anadromous species in cold waters.	Absent. No natural waterways within the species' range would be affected by the proposed action.
AMPHIBIANS & REPTILES			
California tiger salamander (<i>Ambystoma californiense</i>) Critical habitat	FT	Found primarily in annual grasslands; requires vernal pools for breeding and rodent burrows for refuge.	Possible. Suitable breeding habitats in the form of vernal pools and stockponds occur in the region. Rodent burrows are common along the fringes of agricultural areas.
California red-legged frog (<i>Rana aurora draytonii</i>) Critical habitat	FE	Red-legged frogs require aquatic habitat for breeding but also use a variety of other habitat types including riparian and upland areas. Adults often utilize dense, shrubby or emergent vegetation closely associated with deep-water pools with fringes of cattails and dense stands of overhanging vegetation such as willows.	Present. Documented as extant within the project area.
Blunt-nosed leopard lizard (<i>Gambelia sila</i>)	FE, CE	Resident of sparsely vegetated alkali and desert scrub habitats in areas of low topographic relief. They seek cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrow.	Present. Documented as extant within Fresno County.
Alameda whipsnake (<i>Masticophis lateralis euryxanthus</i>)	FT	Restricted to valley foothill hardwood habitat of the coast ranges between Monterey and San Francisco Bay. Species inhabits south-facing slopes and	Absent. The study area is outside of the known range of this species.

		ravines where shrubs form a vegetative mosaic with trees and grasses.	
Giant garter snake (<i>Thamnophis gigas</i>)	FT, CT	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches.	Possible. Documented as extant within Fresno, Merced and San Joaquin Counties.
MAMMALS			
Riparian woodrat (<i>Neotoma fuscipes riparia</i>)	FE, CSC	Well-developed riparian habitats along the San Joaquin and Stanislaus Rivers.	Possible. Only occurs in Stanislaus and San Joaquin Counties along the Stanislaus and San Joaquin Rivers.
Riparian brush rabbit (<i>Sylvilagus bachmani riparius</i>)	FE, CE	Habitat for the riparian brush rabbit consists of riparian communities dominated by willow thickets (<i>Salix spp.</i>), California wild rose (<i>Rosa californica</i>), Pacific blackberry (<i>Rubus vitifolius</i>), wild grape (<i>Vitis californica</i>), Douglas' coyote bush (<i>Baccharis douglasii</i>) and various grasses. A captive breeding program is in place in certain locations along the San Joaquin River.	Possible. Only occurs in Stanislaus and San Joaquin Counties along the Stanislaus and San Joaquin Rivers.
Giant kangaroo rat (<i>Dipodomys ingens</i>)	FE, CE	San Joaquin River Annual grassland on gentle slopes of generally less than 10°, with friable, sandy-loam soils. However, most remaining populations are on poorer, marginal habitats which include shrub communities on a variety of soil types and on slopes up to about 22°.	Possible. Some suitable habitats may be present in the southern portion of the study area.
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	FE, CT	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	Present. CNDDDB records indicate that this species is presumed extant in Fresno, Merced, Stanislaus and San Joaquin Counties.
Fresno kangaroo rat (<i>Dipodomys nitratoideus exilis</i>)	FE, CE	Prefers arid, alkaline plains with sparse vegetation, where it consumes seeds of annuals and shrubs, including saltbush. There are no known populations within the circumscribed historical geographic range in Merced, Madera, and Fresno Counties. A single male Fresno kangaroo rat was captured twice in autumn 1992 on the Alkali Sink Ecological Reserve, west of Fresno.	Unlikely. The study area occupies part of this species historical range. However, the absence of detections since 1992 in spite of intense survey efforts suggests that it may now be extinct.

*Adapted from CNDDDB, 2009 and USFWS list for project area USGS quadrangles.

DEFINITIONS OF OCCURRENCE INDICATORS

Present: Species observed on the study area at time of field surveys or during recent past.

Likely: Species not observed on the study area, but it may reasonably be expected to occur there on a regular basis.

Possible: Species not observed on the study area, but it could occur there from time to time.

Unlikely: Species not observed on the study area, and would not be expected to occur there except, perhaps, as a transient.

Absent: Species not observed on the study area, and precluded from occurring there because habitat requirements not met.

LISTING STATUS CODES

FE: Federally Endangered

FT: Federally Threatened
FD: Federally Delisted
CE: State Endangered
CT: State Threatened

Giant Garter Snake USFWS published a proposal to list the giant garter snake as an endangered species on December 27, 1991 (USFWS 1991) (56 FR 67046). The Service reevaluated the status of the snake before adopting the final rule, which was listed as a threatened species on October 20, 1993 (USFWS 1993a) (58 FR 54053).

Endemic to wetlands in the Sacramento and San Joaquin valleys, the giant garter snake inhabits marshes, sloughs, ponds, small lakes, low gradient streams, and other waterways and agricultural wetlands, such as irrigation and drainage canals, rice fields and the adjacent uplands (USFWS 1999).

Giant garter snakes formerly occurred throughout the wetlands that were extensive and widely distributed in the Sacramento and San Joaquin Valley floors of California (Fitch 1940; Hansen and Brode 1980; Rossman and Stewart 1987). The historical range of the snake is believed to have extended from the vicinity of Chico, in Butte County, southward to Buena Vista Lake, near Bakersfield, in Kern County (Fitch 1940; Fox 1948; Hansen and Brode 1980; Rossman and Stewart 1987). Early collecting localities of the giant garter snake coincide with the distribution of large flood basins, particularly riparian marsh or slough habitats and associated tributary streams (Hansen and Brode 1980). Loss of habitat due to wetlands reclamation, agricultural activities and flood control have extirpated the snake from the southern one third of its range in former wetlands associated with the historic Buena Vista, Tulare, and Kern lake beds (Hansen 1980; Hansen and Brode 1980).

Other Terrestrial Species Vernal pool tadpole shrimp, Vernal pool fairy shrimp, Longhorn fairy shrimp, and Conservancy fairy shrimp require vernal pool habitats. The host plant for the Valley elderberry longhorn beetle is common throughout the region.

California tiger salamander, California red-legged frog, and blunt-nosed leopard lizard could be within the Proposed Action area.

Riparian woodrat, riparian brush rabbit, and giant kangaroo rat could potentially be within the Proposed Action area.

San Joaquin kit fox could potentially be within the Proposed Action area.

3.4.2 Environmental Consequences

No Action

Under the No Action Alternative, this non-CVP water would not be conveyed or stored in CVP facilities. There would be no impacts to biological resources since conditions would remain the same as existing conditions.

Proposed Action

There would be no impacts to biological resources. Most of the habitat types required by species protected by the Endangered Species Act (ESA) do not occur in the Proposed Action area. The Proposed Action would not involve the conversion of any land fallowed and untilled for three or

more years. The Proposed Action also would not change the land use patterns of the cultivated or fallowed fields that do have some value to listed species or birds protected by the Migratory Bird Treaty Act (MBTA). Due to the fact that the Exchange Agreement and or Warren Act contract related water would not reach streams containing listed fish species, there would be no affects to these species. No critical habitat occurs within the area affected by the Proposed Action and so none of the primary constituent elements of any critical habitat would be affected.

Potential effects to giant garter snakes would be expected only if the water quality parameters exceed concentrations or levels identified as toxic or of concerns (e.g., CVRWQCB 1998, USBR 2004b, USFWS and NMFS 2000, USFWS 2008). Daily water quality monitoring, with the requirement of pumps ceasing if water quality objectives are exceeded; however, would avoid such effects to the species. A brief “lag time” between detection of the exceedance (and the resultant shutting down of pumps) and the subsequent reduction in contaminant concentration would be no more than a day or two and would not cause any effect over the extremely short duration before the water quality standards are returned to the target levels.

There would be no new pumps or construction under the Proposed Action. There would be no effects to the giant garter snake due to groundwater overdraft, under this short term action, because groundwater would remain within the district.

The short duration of the water availability, the requirement that no native lands be converted without consultation with USFWS, and the stringent requirements for water quality would preclude any impacts to wildlife, whether federally listed or not.

3.5 Cultural Resources

3.5.1 Affected Environment

A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government’s responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP). Those resources that are on or eligible for inclusion in the NRHP are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 CFR Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking will have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Office, to seek concurrence on Reclamation’s findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

The SJV is rich in historical and prehistoric cultural resources. Cultural resources in this area are generally prehistoric in nature and include remnants of native human populations that existed before European settlement. Prior to the 18th Century, many Native American tribes inhabited the Central Valley. It is possible that many cultural resources lie undiscovered across the valley. The SJV supported extensive populations of Native Americans, principally the Northern Valley Yokuts, in the prehistoric period. Cultural studies in the SJV have been limited. The conversion of land and intensive farming practices over the last century may have destroyed many Native American cultural sites.

The DMC is a component of the CVP which is being evaluated for the NRHP. The DMC, completed in 1951, carries water southeasterly from the Tracy Pumping Plant along the west side of the SJV for irrigation supply, for use in the San Luis Unit, and to replace SJR water stored at Friant Dam and used in the Friant-Kern and Madera systems. The canal is about 117 miles long and terminates at the Mendota Pool, about 30 miles west of Fresno. The initial diversion capacity is 4,600 cfs, which is gradually decreased to 3,211 cfs at the terminus (Reclamation. 2007).

3.5.2 Environmental Consequences

No Action

The No Action Alternative would not change nor modify the DMC and has no potential to affect historic properties pursuant to 36 CFO Part 800.3(a)(1).

Proposed Action

The Proposed Action is an administrative action that would allow for the flow of water through existing facilities to existing users. There would be no ground disturbance or modification needed to the existing facilities as a result of this action nor would there be any changes in cropping patterns or urban development. As a result there would be no potential to affect historic properties pursuant to 36 CFR Part 800.3(a)(1). There would be no impacts to cultural resources as a result of implementing the Proposed Action.

3.6 Indian Trust Assets

3.6.1 Affected Environment

Indian Trust Assets (ITA) are legal interests in property held in trust by the U.S. for federally-recognized Indian tribes or individual Indians. An Indian trust has three components: (1) the trustee, (2) the beneficiary, and (3) the trust asset. ITA can include land, minerals, federally-reserved hunting and fishing rights, federally-reserved water rights, and in-stream flows associated with trust land. Beneficiaries of the Indian trust relationship are federally-recognized Indian tribes with trust land; the U.S. is the trustee. By definition, ITA cannot be sold, leased, or otherwise encumbered without approval of the U.S. The characterization and application of the U.S. trust relationship have been defined by case law that interprets Congressional acts, executive orders, and historic treaty provisions.

The nearest ITA is Lytton Rancheria approximately 35 miles west northwest of the Proposed Action location. The nearest ITA is determined by using the distance from the boundary of the district that is closest to an ITA.

3.6.2 Environmental Consequences

No Action

Under the No Action Alternative there would be no impacts to ITA as there are none in the study area.

Proposed Action

As in the No Action Alternative, there would no impacts to ITA as there are no ITA within district service area boundaries.

3.7 Socioeconomic Resources

3.7.1 Affected Environment

The agricultural industry significantly contributes to the overall economic stability of the SJV. The CVP allocations each year allow farmers to plan for the types of crops to grow and to secure loans to purchase supplies. The economic variances may include fluctuating agricultural prices, insect infestation, changing hydrologic conditions, increased fuel and power costs.

Per the California Labor & Workforce Development Agency (2009), the SJV economic region grew by 7.51 percent from 2001 to 2007. Government was the largest employer. Agriculture, forestry and fishing ranked second. Retail trade came in third with Health Care and Social assistance ranking fourth (See Table 3-4).

Table 3-10 Job Distribution (2007) and Growth by Industry Sector (2001-2007)

Listed by 2007 employment size

INDUSTRY SECTOR	% OF ALL JOBS	JOB GROWTH	INDUSTRY SECTOR	% OF ALL JOBS	JOB GROWTH
Government	19.7%	8.1%	Transportation & Warehousing	3.0%	6.5%
Ag, Forestry, Fishing & Hunting	13.8%	0.1%	Prof., Scientific & Technical Services	2.7%	23.1%
Retail Trade	10.7%	8.9%	Finance & Insurance	2.4%	10.2%
Health Care & Social Assistance	9.2%	12.1%	Real Estate & Rental & Leasing	1.2%	5.4%
Manufacturing	8.5%	0.2%	Information	1.1%	1.8%
Accommodation & Food Services	6.6%	9.4%	Arts, Entertainment & Recreation	0.8%	7.2%
Construction	5.8%	32.2%	Mgmt. of Companies & Enterprises	0.8%	-38.5%
Administrative & Waste Services	4.4%	14.3%	Educational Services	0.8%	29.0%
Other Services (except Public Admin)	3.8%	16.7%	Mining	0.8%	-2.3%
Wholesale Trade	3.3%	13.8%	Utilities	0.5%	9.6%

(California Labor & Workforce Development Agency 2009)

Table 3-5 is the labor market information for the counties included in the Proposed Action area.

Table 3-11 County-Level Socioeconomic Data

County	2008 Population (estimate)	2009 Labor Force	2009 Employment	1999 Per Capita Income (most recent available)	2009 Unemployment Rate (%)
Contra Costa	1,029,703	529,200	469,800	\$30,615	11.2
Alameda	1,474,368	766,300	680,500	\$26,680	11.2
San Joaquin	672,388	302,600	251,400	\$17,365	16.9
Stanislaus	510,694	240,500	199,100	\$16,913	17.2
Merced	246,117	107,400	87,700	\$14,257	18.3
Madera	148,333	67,500	57,400	\$14,682	15.0
Fresno	909,153	442,400	369,300	\$15,495	16.5
California	36,756,666	18,365,000	16,164,300	\$22,711	12.0

Sources: Census Bureau 2009, EDD 2009

3.7.2 Environmental Consequences

No Action

Reclamation would not approve Exchange Agreements or Warren Act contracts to convey and store non-CVP water in CVP facilities. Non-CVP water could still be pumped and distributed to other areas to supplement the diminished CVP water supply. However, this could increase costs to the Water Districts to distribute to other areas. Demand for local labor and farm supplies would be reduced. Under the No Action Alternative, there could be temporary impacts to socioeconomic resources due to fallowing of 30,000 acre. However, this could change with the hydrological conditions.

Proposed Action

Under the Proposed Action, participating districts could convey and store non-CVP water in CVP facilities to supplement their CVP water supply. The 2010 Warren Act contracts would allow the non-CVP water to be distributed to sustain permanent crops. This would help maintain agriculture in this agricultural area.

3.8 Environmental Justice

3.8.1 Affected Environment

Executive Order 12898, dated February 11, 1994, requires Federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations. The population of some small communities typically increases during late summer harvest. The market for seasonal workers on local farms draws thousands of migrant workers, commonly of Hispanic origin from Mexico and Central America. Table 3-6 characterizes the area by county.

Table 3-12 Community Characteristics by County

	Contra Costa		Alameda		San Joaquin		Stanislaus	
General Characteristics	Number	%	Number	%	Number	%	Number	%
White		71.7		56.4		72.7		86.8
Black or African American		9.7		13.5		8.0		3.2
American Indian/Alaskan Native		0.8		0.7		1.40		1.6
Asian		13.7		24.9		13.8		5.0
Native Hawaiian/Pacific Islander		0.5		0.8		0.5		0.60
Hispanic/Latino (of any race)		22.9		21.8		37.0		39.6
Two or more races		3.6		3.8		3.5		2.8
Average household size	2.72		2.71		3		3.03	
Median household income	\$76,317		\$68,263		\$51,874		\$50,367	
Individuals below poverty level		8.7		11.0		14.4		13.6
	Merced		Madera		Fresno		California	
General Characteristics	Number	%	Number	%	Number	%	Number	%
White		85		87.7		81.2		81.2
Black or African American		4.10		4.50		5.8		5.8
American Indian/Alaskan Native		1.60		3.30		2.0		2.0
Asian		6.60		2.10		8.7		8.7
Native Hawaiian/Pacific Islander		0.30		0.30		0.2		0.2
Hispanic/Latino (of any race)		52.90		50.80		48.7		48.7
Two or more races		2.40		2.20		2.1		2.1
Average household size	3.25		3.18		3.09		3.09	
Median household income	\$43,789		\$44,259		\$59,928		\$46,547	
Individuals below poverty level		19.3		16.9	4,557,827	20	181,831	20

Source: US Census Bureau 2009.

3.8.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not approve of Exchange Agreements or Warren Act contract under this Pump-in Program. The Districts could continue to pump their groundwater. This could help maintain agricultural production and local employment.

Proposed Action

Implementing the Proposed Action would not cause any harm to minority or disadvantaged populations within the Proposed Action area. An Exchange Agreement or Warren Act contract would allow the water districts to use their non-CVP water for irrigation in their service area. The availability of this water would help maintain agricultural production and local employment if 2010 is a dry year. Therefore, there would be no adverse impact from the Proposed Action.

3.9 Global Climate Change

3.9.1 Affected Environment

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change (changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.) (EPA 2008a).

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG such as carbon dioxide (CO₂) occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHG (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHG that enter the atmosphere because of human activities are: CO₂, methane (CH₄), nitrous oxide, and fluorinated gasses (EPA 2008a).

During the past century humans have substantially added to the amount of GHG in the atmosphere by burning fossil fuels such as coal, natural gas, oil and gasoline to power our cars, factories, utilities and appliances. The added gases, primarily CO₂ and CH₄, are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes. There are uncertainties associated with the science of climate change (EPA 2008b).

More than 20 million Californians rely on the SWP and CVP. Increases in air temperature may lead to changes in precipitation patterns, runoff timing and volume, sea level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to impacts to California's water resources and project operations.

While there is general consensus in their trend, the magnitudes and onset-timing of impacts are uncertain and are scenario-dependent (Anderson et al. 2008).

3.9.2 Environmental Consequences

No Action

Reclamation would not approve Exchange Agreements or Warren Act contracts to convey and store non-CVP water in CVP facilities. Non-CVP water could not be distributed to other areas to supplement the diminished CVP water supply.

Implementation of the No Action Alternative would have no change on the composition of the atmosphere and therefore would have no direct or indirect effects to climate.

Proposed Action

The Proposed Action would involve no physical changes to the environment, no construction activities, and therefore, would not impact global climate change. However, global climate change is expected to have some effect on the snow pack of the Sierra Nevadas and the run off regime. Current data are not yet clear on the hydrologic changes and how they will affect the San Joaquin Valley. Water allocations are made dependent on hydrologic conditions and environmental requirements. Since Reclamation operations and allocations are flexible, any changes in hydrologic conditions due to global climate change would be addressed within Reclamation's operation flexibility and therefore surface water resource changes due to climate change would be the same with or without the Proposed Action.

3.10 Cumulative Impacts

Cumulative impacts result from incremental impacts of a Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment.

To determine whether cumulatively significant impacts are anticipated from the Proposed Action, the incremental effect of the Proposed Action was examined together with impacts from past, present, and reasonably foreseeable future actions in the same geographic area.

Reclamation's action would be the approval of Exchange Agreements and/or Warren Act contracts for conveyance and storage of non-CVP water. Subsequent actions are beyond Reclamation's approval and authority. Reclamation has made Exchange Agreements or Warren Act contracts available in previous years when excess capacity was available. Most likely in 2010, more districts will request Warren Act contracts since it may be a dry year and groundwater is needed to supplement the reduced CVP supply. This is a two-year action, and the cumulative amount the districts are limited to under this Proposed Action is 50,000 AF. However, districts can request a Warren Act contract separate from this Proposed Action for up to 10,000 AF of non-CVP water, but this action would be analyzed in a separate environmental document. Additionally, in accordance with the Warren Act contract, Reclamation would continue to make these contracts available to requesting districts in future years, given that each district meets present and future requirements for Warren Act contracts.

Agricultural run-off and groundwater pump-in would have cumulative water quality effects to the Mendota Pool; however, the Contracting Officer would terminate conveyance should water quality exceed State water quality standards.

Reclamation has approved transfers and Warren Act contracts in previous years when excess capacity was available (see Table 3-13).

Table 3-13 Warren Act Contracts and Transfers Proposed between 2007-2009

	2006	2007	2008	2009
Warren Acts	3	9	6	15
Transfers	7	4	4	8
Used DMC	1	5	5	2

In 2009, Reclamation received 15 requests for Warren Act contracts and 8 requests for transfers. Two of these requests propose to use the DMC as a conveyance facility. Many of these requests are still under analysis and have not been completed at this time. Reclamation did approve the transfer of 3,700 AF of PID's Replacement Water to Del Puerto Water Storage District via the DMC.

Requests still pending for use of the DMC include:

- A 40-year Warren Act contract for conveyance of 4,500 AFY of Byron Bethany Irrigation District's non-CVP Delta water through the DMC to the City of Tracy's Water Treatment Plant. This proposed action includes an easement for placement of a new discharge pipeline at the headwall of the DMC.
- A transfer of up to 20,500 AF of Central California Irrigation District's (CCID) Exchange Contract CVP supplies to Westlands Water District, San Luis Water District, Panoche Water District, and Del Puerto Water District for the period April through December 2010 and April through December 2011. Certain landowners within CCID would pump up to 75 cfs of groundwater to meet in-district demands in lieu of CCID taking surface water deliveries. The groundwater would be discharged into CCID's conveyance system freeing up its CVP water under the San Joaquin Exchange Contractor's Contract to be delivered to the districts via the DMC and/or the San Luis Canal.
- PID has requested a temporary four-year Warren Act for storage and conveyance of up to 10,000 AF of their pre-1914 San Joaquin River water between Contract Water Years 2010 through 2015 (March 1, 2010-February 28, 2016). The additional non-CVP water conveyed in the DMC from PID's pre-1914 surface water rights water supplies would allow supplemental non-CVP water supplies to irrigate crops within their district boundaries.

Other potential projects in the area:

WWD is preparing an Environmental Impact Report to convey a maximum of 100,000 AF/y of groundwater that may be delivered into the California Aqueduct during any single year. However, actual annual project volume may be less than this maximum value. Pumping would occur mostly between the months of May and September. However, to provide flexibility in water supply, pumping and conveyance may occur in other months. WWD has about 600 operational groundwater wells. Only 15 percent of the total number of wells within WWD would participate in this project initially, and WWD would cap participation at 20 percent. The project area makes it feasible to include all the wells in WWD. Additional wells may be drilled in the future, primarily to replace wells that become less productive or that fail to meet required water quality standards.

Adjacent landowner pumping contributes lower quality groundwater in Mendota Pool. Overall, however, after considering all sources of water quality impacts to Mendota Pool, the constituent concentrations due to the Proposed Action are small changes for a brief period of time and would not approach water quality screening criteria.

In California, authority for managing different aspects of groundwater and surface water resources is separated among federal, Tribal, state, and local agencies. For example, State Water Resources Control Board regulates surface water rights dating from 1914, but not rights prior to 1914; Regional Water Quality Control Board regulates groundwater quality, but not the rights to use groundwater; County groundwater ordinances and local agency groundwater management plans often only apply to a portion of the groundwater basin, and counties or local agencies with overlapping boundaries of responsibility within the same groundwater basin do not necessarily have consistent management objectives in their groundwater ordinances or management plans; and, except in adjudicated basins and areas with adopted groundwater management plans, individuals have few restrictions on how much groundwater they can use, provided the water is put to beneficial use. Because of the connection between surface water and groundwater, the unmanaged groundwater use will eventually affect other water users and may have significant impacts on the environment and economy (2009b).

Without adequate knowledge of storage, distribution, depletion, and replenishment of groundwater resources as well as various other local and regional geologic and hydrologic factors, the effect of current and future activities on groundwater resources cannot be adequately predicted (Boyle Engineering Corporation 2007).

It is not known at this time the level of subsidence threshold that would cause a significant impact on the environment and economy.

The cumulative effects of groundwater pumping and continued application of irrigation water to agricultural lands would contribute indirectly to the current groundwater conditions, and future trends as a result of decisions to be made regarding overdraft.

Under Reclamation's monitoring program, data would be collected to fill gaps in information as they relate to subsidence and groundwater quality, and changes made in order to safely maintain water quality and water levels above subsidence thresholds.

Section 4 Consultation and Coordination

4.1 Fish and Wildlife Coordination Act (16 USC § 661 et seq.)

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water resource development projects that could affect biological resources. The Proposed Action does not involve any new impoundment or diversion of waters, channel deepening, or other control or modification of a stream or body of water as described in the statute, but only the movement of non-CVP water through CVP facilities. Therefore the FWCA does not apply.

4.2 Endangered Species Act (16 USC §1531 et seq.)

Section 7 of this Act requires Federal agencies to ensure that all federally associated activities within the U.S. do not jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of the critical habitat of these species. Action agencies must consult with the USFWS, which maintains current lists of species that have been designated as threatened or endangered, to determine the potential impacts a project may have on protected species. The Proposed Action would have no effect to threatened or endangered species or designated critical habitats, based on the lack of construction and the implementation of stringent water quality standards.

4.3 National Historic Preservation Act (16 USC § 470 et seq.)

The Section 106 process is outlined in the Federal regulations at 36 CFR Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking will have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action that has the potential to affect historic properties, Reclamation must identify the APE, determine if historic properties are present within that APE, determine the effect that the undertaking would have on historic properties, and consult with the State Historic Preservation Office, to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties. No construction, new land use, or new ground disturbing activities would occur as a result of the Proposed Action. Therefore, the proposed action has no potential to affect historic properties (36 CFR 800.3(a)(1)).

4.4 Migratory Bird Treaty Act (16 USC § 703 et seq.)

The MBTA implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the MBTA provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the MBTA, the Secretary of the Interior (Secretary) may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

The Proposed Action would have no effect on birds protected by the MBTA, based on the lack of construction and the implementation of stringent water quality standards.

4.5 Executive Order 11988 – Floodplain Management and Executive Order 11990 - Protection of Wetlands

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands. This action would not adversely affect floodplains or wetlands.

4.6 Clean Water Act (16 USC § 703 et seq.)

Section 401

Section 401 of the Clean Water Act [CWA] (33 USC § 1311) prohibits the discharge of any pollutants into navigable waters, except as allowed by permit issued under sections 402 and 404 of the CWA (33 USC § 1342 and 1344). If new structures (e.g., treatment plants) are proposed, that would discharge effluent into navigable waters, relevant permits under the CWA would be required for the project applicant(s). Section 401 requires any applicant for an individual United States Army Corps of Engineers dredge and fill discharge permit to first obtain certification from the state that the activity associated with dredging or filling will comply with applicable state effluent and water quality standards. This certification must be approved or waived prior to the issuance of a permit for dredging and filling.

Section 404

Section 404 of the CWA authorizes the United States Army Corps of Engineers to issue permits to regulate the discharge of “dredged or fill materials into waters of the United States” (33 USC § 1344).

The Proposed Action does not involve discharge into waters of the United States or wetlands; hence, no permit would be required.

4.7 Clean Air Act (42 USC § 7506 (C))

Section 176 of the CAA requires that any entity of the Federal government that engages in, supports, or in any way provided financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable SIP required under Section 110 (a) of the CAA (42 USC 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with a SIP’s purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements will, in fact conform to the applicable SIP before the action is taken.

There would be no impacts to air quality; therefore, a conformity analysis would not be required.

Section 6 List of Preparers and Reviewers

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Section 7 References

- Anderson, J, F Chung, M Anderson, L Brekke, D Easton, M Ejetal, R Peterson, and R Snyder. 2008. *Progress on Incorporating Climate Change into Management of California's Water Resources*. Climatic Change (2008) 87 (Suppl 1):S91–S108 DOI 10.1007/s10584-007-9353-1.
- Bertoldi, G.L., R.M.H. Johnson, and K.D. Evenson. 1991. Ground Water in the Central Valley, California - A Summary Report. U.S. Geological Survey Professional Paper 1401-A.
- Boyle Engineering Corporation. 2007. *Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area and a Portion of San Joaquin County*. Groundwater Management Plan/SLDMWA-Northern. 49.
- Brush, Charles F., Belitz, K., and Phillips, S. 2004. Estimation of a Water Budget for 1972-2000 for the Grasslands Area, Central Part of the Western San Joaquin Valley, CA. U.S. Geological Survey Scientific Investigations Report 2004-5180, 49 p.
- Brush, Charles F., Belitz, K., Phillips, S., Burrow, K., and Knifong, D. 2004. MODGRASS: Update of a Ground-Water Flow Model for the Central Part of the Western San Joaquin Valley, California. U.S. Geological Survey Scientific Investigations Report 2005-5290, 81 p.
- Bull, W. B., Miller, R.E. 1975. Land Subsidence due to Ground Water Withdrawal in the Los-Banos Kettleman City Area, California. Part 1: changes in the hydrologic environment conducive to subsidence. U.S. Geological Survey Professional Paper 437-E, 71 p.
- Bureau of Reclamation. 2002. *FONSI/EA-02-72 One-Time Temporary Storage of 4,000 acre-feet of the San Luis Water District's Central Valley Project Water Out of the Service District*
- Bureau of Reclamation. 2004a. EIS/EIR Water Transfer Program for the San Joaquin River Exchange Contractors Water Authority 2005-2014, December 2004.
- Bureau of Reclamation. 2004b. Environmental Impact Statement – Mendota Pool 10-Year Exchange Agreements.
- Bureau of Reclamation. 2005. *Environmental Assessment, Long-Term Contract Renewal, Delta Mendota Canal Unit, Central Valley Project, Sacramento, CA*. February 2005.
- Bureau of Reclamation. 2005b. *2005 San Luis Public Draft Central Valley Project, West San Joaquin Division, San Luis Unit Long-Term Water Service Contract Renewal Environmental Impact Statement*. 2005
- Bureau of Reclamation. 2005c. *Delta-Mendota Canal Unit Environmental Assessment for Long Term Contract Renewal*, dated February 2005.
- Bureau of Reclamation. 2007. *EA-07-59 San Luis Unit Water Service Interim Renewal Contracts 2008-2011*, dated December 2007.

- California Code of Regulations. 2009. Official California Code of Regulations. 22 CCR §64449 Chapter 15 Article 16. Last accessed at <http://weblinks.westlaw.com> through the California Office of Administrative Law, February 9, 2009.
- California Department of Water Resources, 1998a. Compaction Recorded by Extensometer-Wells Since 1984 in the West San Joaquin Valley, California. Sacramento, California.
- California Labor & Workforce Development Agency. 2009. *San Joaquin Valley Region 2009 Economic Profile*. Website: http://www.labor.ca.gov/panel/pdf/2009_San_Joaquin_Valley_Region_Economic_Profile.pdf
- CCID. 1997. Central California Irrigation District. Groundwater Conditions in and Near the Central California Irrigation District. Kenneth D. Schmidt and Associates, Los Banos, CA.
- Central Valley Regional Water Quality Control Board. 1998. Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins.
- Central Valley Regional Water Quality Control Board. 2009. Website - *Irrigated Lands - Development of the Long-term*. Long-Term Irrigated Lands Regulatory Program Alternatives, 2nd Draft Proposal. http://www.waterboards.ca.gov/rwqcb5/water_issues/irrigated_lands/long_term_program_development/exist_cond_rpt/ch04_pt3.pdf
- City of Tracy. 2007. Website – http://www.ci.tracy.ca.us/city_council/meetings/agendas/2005/08/02/01b.pdf
- CVRWQCB. 1998. The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region, Fourth Edition: The Sacramento River Basin and the San Joaquin River Basin. California Regional Water Quality Control Board, Central Valley Region. Sacramento, CA.
- DWR. 1975. California Department of Water Resources. California's Ground Water Bulletin 118. State of California. Sacramento, CA.
- DWR. 2003. California's Ground Water, Bulletin 118-update 2003.
- DWR. 2009a. *DWR Announces First Snow Survey Results of 2009/2010 Winter Season*. Press Release, December 30, 2009.
- DWR. 2009b. Website – *California Water Plan Update 2009 Pre-final Draft*, Ch 8 Conjunctive Management, Volume 2, Resource Management Strategies and Groundwater. http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/v2ch08-conj_mgt_pf_09.pdf
- EDD. 2009. California Employment Development Department (EDD). 2009. Website: <http://www.labormarketinfo.edd.ca.gov/?pageid=1006>.
- EPA. 2008: Website – Climate Change, Basic Information. <http://www.epa.gov/climatechange/basicinfo.html>
- EPA. 2008b: Website – Climate Change, Science.
- Exchange Contractors. 1997. Exchange Contractors. 1997b. AB 3030-Groundwater Management Plan. Los Banos, CA.
- Fitch, H. S. (1940). *A biogeographical study of the ordinoides Artenkreis of garter snakes (genus Thamnophis)*. University of California Publications in Zoology 44:1-150.
- Fox, W. (1948). *The relationships of the garter snakes of the garter snake Thamnophis ordinoides*. Copeia 1948:113-120.
- Fresno County and Exchange Contractors. 2001. Fresno County and Exchange Contractors. Memorandum of Understanding Providing Local Water District Exemption from Regulation of Groundwater Resources within Fresno County Referencing Fresno County Ordinance Code Title 14, Chapter 3, Section 14.03.05E.

- Hansen, G.E. and J.M. Brode. (1980). *Status of the giant garter snake, *Thamnophis couchii* gigas* (Fitch). California Department of Fish and Game, Inland Fisheries Endangered Species Program Special Publication Report. 80-5:1-14.
- Larson, K. J., Basagaoglu, H., and Marino, M. A. 2001. Prediction of optimal safe ground water yield and land subsidence in the Los Banos-Kettleman City area, California, using a calibrated numerical simulation model. *Journal of Hydrology* 242 (2001) 79-102.
- Madera County. 2009. Website - <http://www.madera-county.com/countycode/ DATA/TITLE13/Chapter 13 100 RULES AND REGU.htm l#5>
- Mizuno, Frances. 2009. Personal communication with Frances Mizuno of SLDMWA.
- Poland, J.f., Lofgren, B.E., Ireland, R.L., and Pugh, R.G., 1975. Land Subsidence in the San Joaquin Valley, California as of 1972. U.S. Geological Survey Professional Paper 473-H. U.S. Government Printing Office, Washington, DC.
- Rossman, D.A. and G.R. Stewart. (1987). *Taxonomic reevaluation of *Thamnophis couchii* (Serpentes: Colubridae)*. Occasional Papers of the Museum of Zoology, Louisiana State University 63:1-25.
- San Joaquin Valley Drainage Program. 1990. *A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley. Final Report of the San Joaquin Valley Drainage Program*. U.S. Department of the Interior and California Resources Agency
- San Joaquin River Dissolved Oxygen Technical Working Group. 2002. San Joaquin River Dissolved Oxygen Total Maximum Daily Load Technical Working Group website: http://www.sjrtdl.org/technical/2001_studies/reports/final/qt_final_apdx_i.pdf
- SJVAPCD. 2010a. Ambient Air Quality Standards and Valley Attainment Status. Website: <http://www.valleyair.org/aqinfo/attainment.htm>. Accessed: February 19, 2010.
- SJVAPCD. 2010b. Requirements for Agricultural Operations: Do I need a permit project calculator. Website: http://www.valleyair.org/General_Info/AGLoader.htm. Accessed: February 19, 2010.
- Stanislaus. 2009. Stanislaus Local Agency Formation Commission. Executive Officer's Agenda Report. July 22, 2009. Website: <http://www.stanislauslafco.org/info/PDF/Staff%20Rpts/MSR.SOL.6WDsIDs.pdf>
- U.S. Census Bureau 2010. County Quick Facts for the US Census Bureau website <http://quickfacts.census.gov/qfd/states/06000.html>
- (*Thamnophis gigas*). U.S. Fish and Wildlife Service, Portland, OR. 192 pp.
- USFWS & NMFS. 2000. Joint Biological Opinion on the Environmental Protection Agency's (EPA) "Final Rule for the Promulgation of Water Quality Standards: Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California". March 24, 2000. File #: 1-1-98-F-21.
- USFWS. 1999. *Draft recovery plan for the giant garter snake*
- USFWS. 2008. Potential effects of selenium contamination on federally-listed species resulting from delivery of federal water to the San Luis Unit. USFWS, Sacramento Fish & Wildlife Office, Environmental Contaminants Division. March 2008.
- White, C. 2004. Central California Irrigation District, Personal Communication with Susan Hootkins and Jim Durkin, URS, March 2, 2004.